AMERICAN GAS ASSOCIATION MONTHLY

What the Kansas City Convention Offers the Natural Gas Man

Michigan's Oil-Natural Gas Situation

By ARTHUR W. STACE

Meet Monsieur Gastout!

By MISS DOROTHY DIGNAM

Constructing World's Largest Gas Holder

What Can Research Do for Us?

By H. C. ABELL

Waste Disposal—A Description of the Pennsylvania Study

By E. G. BOYER

Natural Gas Exhibition Will Be Large

The Advantages and Limitations of Conversion Equipment

By C. GEORGE SEGELER

April, 1929

Volume XI
Number 4

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AMERICAN GAS ASSOCIATION MONTHLY

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Volume XI APRIL, 1929 Number 4

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THE DATES OF THE NATURAL GAS DEPARTMENT CONVENTION AT KANSAS CITY, MISSOURI

* * * *

PLAN *NOW* TO BE THERE *THEN.*

The Association does not hold itself responsible for statements and opinions contained in papers and discussions appearing herein.

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Our Own Who's Who

Underwood and Underwood

XLVII

WILLIAM ALTON JONES

WILLIAM ALTON JONES, first vice-president of the Cities Service Co. and, since 1925, chairman of the Executive Committee of Henry L. Doherty & Co., is one of the youngest of the chief executives of the largest public utility organizations in the United States. He is still in his thirties. He is a director or officer in more than 50 corporations. Mr. Jones came to New York in 1921 from Joplin, Mo., where he was treasurer of the Empire District Co. to become assistant to the late Frank Frueauff, chief executive of the Cities Service Company under Mr. Doherty. Such was the ability he displayed that upon the death of Mr. Frueauff in 1922 he was assigned to some of the duties hitherto performed by that executive. Possessing a keen, analytical mind, a broad comprehension of the possibilities of the development of the properties comprising the Cities Service Company, and the ability to get things done, Mr. Jones was soon recognized as a leader by his associates. His elevation to the position of first vice-president was the visible expression of Mr. Doherty's confidence in him.

One of Mr. Jones' chief assets is his ability to make friends and win the confidence of those with whom he comes in contact. He is an authority on utility problems, a subject in which he became interested when a student at Vanderbilt University. He is one of the best posted men in the utility field on industrial research and economics.

During his eight years of service in New York, Mr. Jones has accomplished a prodigious amount of work. As he is looked to for advice, for decisions on complicated problems, and for the formulation of policies that affect more than a hundred subsidiary companies, he is compelled to work under high pressure every day in the week, but never seems to be hurried.

In appearance Mr. Jones looks more like a prosperous young doctor than the executive head of an $850,000,000 business organization. He is tall (6 ft. 1 in.) and of athletic build; has grey eyes, an alert manner, and a pleasing personality. He has a wonderful memory for details of the financial status of the various subsidiaries of which the Cities Service Company is composed.

AMERICAN GAS ASSOCIATION MONTHLY

VOLUME XI APRIL, 1929 NUMBER 4

What the Kansas City Convention Offers the Natural Gas Man

WHEN the annual convention and exhibition of the Natural Gas Department of the A. G. A. opens at Kansas City, Mo., on May 6, it will be apparent to the delegates that great effort has been exerted to make the meeting one of the best ever held. Members of the convention committees and the officers and directors of the Department have spent much time and energy perfecting the details and arrangements of the meeting, with the result that the natural gas men attending will be able to derive great benefit from a program of exceptional merit, a large exhibition of appliances and equipment, and suitable entertainment features.

Chairman S. W. Meals

Vice-chairman H. C. Morris

Secretary E. J. Stephany

In this issue of the MONTHLY is presented a tentative program of the business sessions. Every speaker is a leader in the industry. It is not necessary to paint a glowing picture of the business sessions, as it is apparent that the program is all it should be, and more. The past year has been an important one for the natural gas industry as a whole and the Program Committee, under the able direction of A. W. Leonard, has provided for addresses and reports which will be of the utmost value.

The list of speakers is an imposing one. Worthy of particular mention is the fact that five of the most important leaders of the natural gas industry will address the sessions, taking as their subjects some of the more significant problems of the present day.

Every business session will be crammed with features, and particularly the one on Thursday morning. There will be very few delegates who will "go home early," the final business session being one of the best.

The Missouri Theater will be used for the convention sessions. A better choice could not have been made, as the theater is well equipped and appointed.

Of course the exhibition of appliances and equipment will attract a great deal of attention and time. The Kansas City convention hall is an especially fine place for exhibits of this nature.

The list of exhibitors and their booth numbers is given elsewhere in this issue of the MONTHLY.

The entertainment features have not been overlooked. Complimentary luncheons will be served to the delegates every noon, carrying out the tradition long established by the

The figures indicate the following: 1, Hotel Savoy; 2, Coates House; 3, Hotel Westgate; 4, Shrine Temple; 5, Athletic Club; 6, Convention Bureau; 7, Hotel Kupper; 8, Hotel Mercer; 9, Hotel Baltimore; 10, Hotel Bray; 11, Hotel Glennon; 12, Hotel Stats; 13, Hotel Sexton; 14, Hotel Dixon; 15, Hotel Muehlebach; 16, Hotel Aladdin; 18, Convention Hall; 19, Hotel Robert E. Lee; 20, Hotel President; 21, Hotel Commonwealth.

former supply men's association. There will be a stag smoker and entertainment on a big scale the evening of May 7, with the annual banquet the evening of May 8. Announcement of these features will be made in the near future.

Suitable entertainment is also being arranged for the ladies attending the convention.

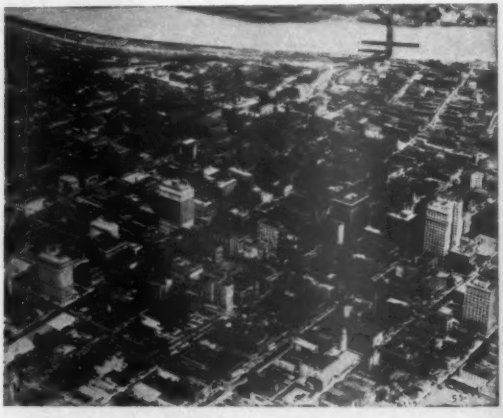
Convention sessions will be held in this adequate and well-appointed theater

The members of the Department will be pleased to know that the railroads will grant the usual fare and a half for the round trip on the identification plan. With this plan the purchaser gets an identification certificate at the time of buying the railroad ticket, and has the certificate validated in Kansas City.

Special attention of the members is called to the fact that this year a registration fee will be charged. The plan is to charge every member $1, and representatives of manufacturer companies *not* exhibiting $3. Exhibiting firms are granted three registration badges without charge, and additional ones at $1. This registration fee will be used to defray the large expenses incurred as a result of the splendid entertainment features planned. The cooperation of all is requested.

Since this issue of the MONTHLY goes to press considerably before the first of April, it is not possible to give all details concerning the convention. The program given here is, of course, tentative, and other mat-

(Continued on page 200)



Air view of Kansas City

The exhibition will be housed in the large convention hall

Tentative Convention Program—Natural Gas Department—Kansas City—May 6-9

All Convention Sessions Will be Held in the Missouri Theater

Monday, May 6

Registration.

Exhibition opens.

Committee Meetings.

Tuesday, May 7—10 A.M.

Invocation, by Dr. Robert Nelson Spencer, Rector of Grace and Holy Trinity Episcopal Church.

Address of Welcome, by Hon. A. I. Beach, Mayor of Kansas City.

Response and Address of Chairman, by Samuel W. Meals, Chairman, Natural Gas Dept., President, Carnegie Natural Gas Corp., Pittsburgh, Pa.

In Memoriam, by John M. Garard, Ohio Fuel Gas Co., Columbus, Ohio.

Address, by Oscar H. Fogg, President, American Gas Association; Vice-President, Consolidated Gas Co. of New York, N. Y.

Address, by W. A. Jones, Chairman of Executive Committee, Henry L. Doherty & Co., New York, N. Y.

Address, by Alexander Forward, Managing Director, American Gas Association.

"Some Pipe Line and Transmission Problems," by John C. Diehl, Metric Metal Works, Erie, Pa.

Tuesday, May 7—2 P.M.

"Some More Wrinkles," by H. J. Struth, The Oil Weekly, Houston, Texas.

"Selling Domestic Gas," by George Bowersox, Southern California Gas Co., Los Angeles, Calif.

"Changing Over a City's Gas Supply," by Harry C. Abell, Vice-President, Electric Bond and Share Co., New York, N. Y.

"What We Are Doing in Research," by H. C. Cooper, Hope Natural Gas Co., Pittsburgh, Pa.

(Continued on page 200)

An Intimate View of the Natural Gas Convention Committees

Exhibition Committee

F. M. Rosenkrans, Chairman
O. T. Dawson is not shown here

C. W. Berghorn

F. M. Rosenkrans

H. L. Whitelaw

E. F. Schmidt

W. E. Derwent

F. H. Thomas

C. R. Zeskey

H. A. Newton

Transportation Committee

Arthur Booth, Chairman—his picture is not shown here

W. C. Grant

George Wehrle

W. D. Dickey

Program Committee

A. W. Leonard, Chairman
T. R. Weymouth is also a member of this committee

F. L. Chase

A. W. Leonard

N. C. McGowen

T. H. Kerr

Eugene Metz

T. J. Strickler

H. C. Cooper

W. H. McKenzie

T. R. Weymouth

H. L. Montgomery

J. B. Corrin

P. H. Gossler

P. C. Ford

Arrangements and Entertainment Committee

T. J. Strickler, Chairman

The pictures of Major Strickler, L. B. Denning, H. C. Palmer, and T. H. Barton are not shown in this group.

F. F. Schauer

(Continued from page 197)

"Measuring Great Volumes of Gas," by T. R. Weymouth, Oklahoma Natural Gas Corp., Tulsa, Okla.

"Flowing Through Pipe Lines," by H. D. Hancock, Henry L. Doherty and Co., New York, N. Y.

"Industrial Gas Sales," by R. M. Redding, Dallas Gas Co., Dallas, Texas.

Wednesday, May 8—10 A.M.

"Cracking Natural Gas," by J. A. Yunker, Louisville Gas and Electric Co., Louisville, Ky.

"Facts Relating to Natural Gas Service," by J. J. O'Brien, President, Byllesby Engineering and Management Corp., Chicago, Ill.

"Distribution," by E. A. Clark, Oklahoma Natural Gas Corp., Tulsa, Okla.

Motion Picture—Putting Out Well Fires.

Wednesday, May 8—2 P.M.

Address, by R. W. Gallagher, President, East Ohio Gas Co., Cleveland, Ohio.

Question Discussion—F. L. Chase, Lone Star Gas Co., Dallas, Texas, presiding. The following are among the questions to be discussed:

1. In what form can news be best supplied to local newspapers?
2. What are the latest developments in the use of expansion joints on welded lines?
3. What are the best methods of covering or coating pipes to prevent corrosion?
4. What control methods are used for distribution system pressure regulation?
5. What distribution system changes are needed when changing from manufactured to natural gas?
6. What metering equipment is best for large industrial customers?
7. How can the volume of gas wells best be determined with the least waste of gas or danger to wells?

Thursday, May 9—10 A.M.

"Natural Gas Research," by N. A. C. Smith, United States Bureau of Mines, Bartlesville, Okla.

"What the Public Expects of the Gas Industry," by H. C. Blackwell, President, Union Gas and Electric Co., Cincinnati, Ohio.

Symposium—"Selling to the Home," by Mrs. Luella M. Fisher, Chairman, Home Service Committee, A. G. A.; Eriez Stove Co., Erie, Pa.

"What Natural Gas Adds to the Wealth of a State," by H. J. Hoover, Natural Gas Consultant, Cincinnati, Ohio.

The Convention Offers

(Continued from page 196)

ters discussed are subject to slight revision. However, in the May issue of the MONTHLY complete and authoritative information will be given which will be of substantial aid to the delegates.

The past year has been a notable one for the natural gas industry, aand there is every reason to expect that the 1929 convention will be an exceptional meeting. The attendance will be large, and those who have not yet made reservations are requested to do so immediately to avoid disappointment. The Kansas City convention will establish new high records for the natural gas men, and every one who can possibly attend will be there.

M. I. T. Again Offers Course in Industrial Gas

THE annual industrial gas course offered by Massachusetts Institute of Technology will be given at the Institute, Cambridge, Mass., June 17 to 22.

This is the eighth consecutive year that M. I. T. has conducted a specially prepared course for industrial gas men. The course is sponsored by the New England Gas Association with the cooperation of the American Gas Association.

The course is being conducted under the able direction of Prof. Wilkes, with the assistance of other M. I. T. professors.

The cost of the course is $50, exclusive of living expenses. Special arrangements have been made for the use of dormitories by students taking the course, at a cost of one dollar a day.

All interested in enrolling in this course are urged to communicate with L. B. Crossman, Consolidated Gas Co. of Boston, Mass., chairman of the Industrial Gas Educational Committee of the New England Gas Association.

Waste Disposal—A Description of the Pennsylvania Study

By E. G. BOYER

The important subject of waste disposal was covered at the recent meeting of the Pennsylvania Gas Association by this report of Mr. Boyer's committee. Through the kind cooperation of Mr. Boyer we are able to present his report in the MONTHLY, and thus make this valuable study part of the permanent record of the gas industry.—Editor.

E. G. Boyer

ON April 10, 1928, at the meeting of the Pennsylvania Gas Association at York, Pa., W. L. Stevenson, chief engineer of the Pennsylvania State Department of Health, gave a talk entitled "Industrial Waste Disposal Problems Solved by Cooperation." Following this meeting Mark Pendleton, President of the gas association, appointed Smyser Blair, A. F. Kunberger, L. W. Seltzer, H. W. Brubaker, and E. G. Boyer, chairman, as a committee to cooperate with the State authorities upon this subject.

Meeting with the committee, Mr. Stevenson outlined the plan (known as the "Pennsylvania Plan") that the Sanitary Water Board is endeavoring to carry out with the industries of the State of Pennsylvania. This plan is to have the different industries prescribe the proper methods of handling their waste disposals before discharging them into the different streams throughout the State. Agreements are drawn up between the various industrial plants and the State in which the industrial plants agree to do everything in their power to eliminate any contamination of the streams, and, in case of accidents, to notify the Sanitary Water Board so they can get in touch with the different water companies along the river and warn them that an accident has occurred, thus allowing these water companies to make the proper provision so as not to carry polluted water into their distribution mains.

In reference to the gas companies of the State, Mr. Stevenson thought he could work with the committee and have them draw up the proper means of separation and treatment of the effluence from the gas plants and then proceed along the lines as outlined for the industrial plants. The State authorities also promised not to disclose what companies cause these accidents as long as the companies proceed to rectify them as quickly as possible.

Keeping the "Pennsylvania Plan" in mind, the committee worked with the following premises as a basis:

1. All waste water and condensation accumulating in the gas plant should be properly treated to prevent tar, tar oil, or other objectionable products produced through the manufacture of gas from going into the streams.

2. The treating plant was to be of a simple form but should be sufficiently efficient to remove all tars and oily matters.

In consideration of method and equipment for preventing tar and oily wastes from entering the streams primarily, gas works should be divided into two classes:

a. Plants of sufficient size producing enough tar and residuals to make profitable a complete dehydration or treating plant.

b. Plants of smaller size where a gravity separator is the cheapest and best equipment that can be installed.

In general it is of primary importance that the pipe lines carrying trade wastes shall be separated from any lines carrying condenser or cooling water. If this is done, it is possible to have practically no effluent from the gravity separator. This, of course, is based on the premise that the hot liquor from the separator be used through the tar batter and washer cooler.

Mr. Boyer is with the Philadelphia Suburban Counties Gas and Electric Co., Philadelphia, Pa.

The gas handling plant at West Conshohocken

With the above conclusions in mind the following methods were recommended:

1. Adequate separator.
2. Iron sulphate system of treatment.
3. Dehydration of tar.
4. Phenol treatment with benzol.

The methods employed by any plant depend upon location, size of plant, size of river or stream, and nearness of cities below site of plant who take their water supply from the streams.

Under adequate separators the committee recommends that all tar separator designs be based on ¾ of a cu.ft. of net liquid storage for a thousand cu.ft. of gas made for 24 hours, which is the same as six gallons of net liquid storage. For more detail on separator design there are papers in the *A.G.A. Proceedings* for 1920 by Willien, and for 1921 by Sperr.

The iron sulphate system of treatment can be briefly explained as follows:

All tar-bearing liquors enter the tar separator, which by a system of baffling drops the tar to the bottom of the tank from which it is pumped to the relief holder for storage. The last compartment of the separator is completely separated from the main body of the tank, and into this compartment the water flows over a wire. This water contains a small amount of tar and oil in suspension which must be removed. Solutions of iron sulphate and lime are fed into the last compartment at the rate of two pounds of iron to three pounds of lime per thousand gallons of effluent. These solutions form a flocculent precipitate, which, upon settling, takes all suspended matter with it. The effluent is pumped from the separator to baffled settling tanks to allow the precipitate to drop. From these tanks the water flows by gravity through sand and coke filters where the last traces are removed, and the clean effluent flows through an inspection sump out to the river.

In the dehydration of tar it must be remembered that this system is required where soft coal is used as a generator fuel and where the emulsion runs from 35 per cent to 40 per cent and higher, as it is physically impossible to handle any emulsion of this degree with a tar separator regardless of size.

In the use of soft coal there may be traces of benzol showing in the effluent from the plant, and in this extreme case it might be necessary to use some method of treatment with benzol.

The above methods met with the approval of the Sanitary Water Board and the following form of agreement was proposed to be executed between the gas companies of Pennsylvania and the Sanitary Water Board of Pennsylvania:

THIS AGREEMENT made the . . . . . one thousand nine hundred and twenty-eight, between the SANITARY WATER BOARD of the Commonwealth of Pennsylvania, party of the first part, and companies operating manufactured gas works within the Commonwealth

of Pennsylvania, which shall duly execute this agreement, parties of the second part:

WITNESSETH THAT

WHEREAS, The Sanitary Water Board has the duty of administering the anti-stream pollution statutes and to investigate and determine reasonable and practicable methods of preventing pollution of the waters of the Commonwealth, and

WHEREAS, Certain of the wastes from the gas works, such as tar, are not capable of assimilation in streams and may cause offensive tastes and odors in public water supplies, and

WHEREAS, The Gas Industry has devised and companies operating gas works have quite generally installed and are now operating equipment and apparatus for the elimination or substantial treatment of such wastes so as to prevent harm to public water supplies, and

WHEREAS, The companies which are parties to this agreement desire to cooperate with the Sanitary Water Board for the protection of the waters of the State.

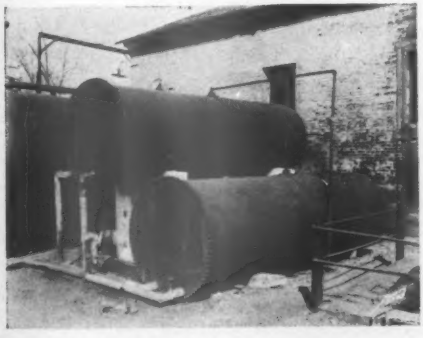
THEREFORE, In consideration of the premises hereof and the advantages to be obtained by such cooperation the parties hereto agree as follows:

(1) PURPOSE OF AGREEMENT. The parties hereto join together, as provided herein, to cooperate for the protection of the waters of the State.

(2) PARTIES OF THE SECOND PART. The Companies parties hereto, hereby agree

(a) To install necessary equipment and apparatus for elimination or substantial treatment of gas works wastes where the lack of the same is the cause of harmful stream pollution.

(b) To maintain in an adequate state of efficiency, their equipment and apparatus for elimination or substantial treatment of gas works wastes.



The Pottstown gas plant

Another view of the West Conshohocken gas handling plant

(c) To promptly notify the Sanitary Water Board of any accident to the plant equipment and apparatus which might impair the efficient elimination or substantial treatment of the said wastes.

(d) When accidents occur to make expeditious repair of such plant equipment and apparatus and meanwhile, promptly adopt emergency remedial measures.

(e) To keep the Sanitary Water Board informed of new or improved methods that may be developed for the elimination or substantial treatment of the said wastes and to give the Sanitary Water Board full opportunity for determining to its satisfaction the efficacy of such methods.

(3) PARTY OF THE FIRST PART. The Sanitary Water Board hereby agrees

(a) Not to make public (excepting as provided in section (b) of this article) information received from the companies parties hereto, pursuant to Section 2 (c) hereof, or to use or voluntarily furnish the same for purpose of prosecution, provided that immediate action be taken to make necessary repairs and the other provisions of this agreement be fulfilled.

(b) To give notice to water works in Pennsylvania likely to be affected by effluent from the Plant where the said accident occurred in order that the operation of such water works may be modified, if practicable, in order to prevent or minimize offensive tastes or odors in the water supply as delivered to the consumers, provided, however, that in any notice given under this sub-section the name of the company at

The Reading, Pa., gas plant

whose plant the accident occurred shall not be made public.

(4) TREATMENT WORKS. The bona fide installation and the efficient operation of equipment and apparatus for the elimination or substantial treatment of the said wastes as proposed by parties of the second part, and in accordance with plans submitted to and approved by the Sanitary Water Board shall be deemed as compliance with the requirements of the law.

(5) TERMINATION. Any company party to this agreement may cease being a party thereto two years after having given notice in writing of such intention to the Sanitary Water Board.

(6) EXECUTION. To facilitate the execution hereof, this agreement shall be deemed to be fully executed and delivered, if executed in separate copies by any one, or any one or more groups of the parties hereto, and such separate copies so executed returned to the Secretary of Health, as the Chairman of the Sanitary Water Board for filing shall constitute an effectual and valid agreement, and typewritten or printed copies thereof showing all signatures shall be furnished each party hereto.

IN WITNESS THEREOF the parties hereto have caused this agreement to be executed in duplicate by the Sanitary Water Board by its Chairman duly attested by its Secretary and the seal of the Sanitary Water Board affixed hereto, and the Companies parties hereto have caused their names to be signed by their presidents or vice-presidents, attested by their secretaries or assistant secretaries, and the seals of said parties to be affixed hereto as of the day and date first above written.

(Continued on page 235)

Long Distance Mains Now Reach 317 Small Illinois Towns

ANOTHER of the conveniences of living —manufactured gas—formerly available only in large cities, is now given to 317 Illinois communities, most of them too small to sustain gas generating plants of their own, through the development of long-distance transmission of the fuel. This is shown by a survey of the gas facilities of the state recently completed by the Illinois Committee on Public Utility Information.

Radiating from large, centrally located gas plants are 1,269 miles of intercity mains, most of which carry gas at high pressures—some as great as 100 pounds per square inch. Thus a small pipe carries a relatively large quantity of fuel. Pressure is reduced to about one-half pound before the fuel is distributed to users.

In many instances the mains have been tapped to supply gas to adjacent farms, the committee finds.

Gas is piped 85 miles in Illinois in one instance. This is through a main of the Western United Gas & Electric Company, extending from Joliet to Harvard and serving many communities along its route. This typical company serves 81 communities, the average population of which is about 5,100, according to the committee.

Interconnection of adjacent gas systems is an innovation that is bringing economies in manufacture and distribution and assures continuity of service, the state survey discloses. Illinois gas companies have made nine such connections, enabling a company to obtain a supply of fuel from a neighboring system in case of breakdown, and permitting the most efficient gas-making plants to be operated at their maximum capacity, a company having a surplus of cheap-made gas selling to its neighbor.

Following the wires of the electric light and power companies, the manufactured gas industry of the state is removing the last obstacle that may stand in the way of a small community obtaining the population or industrial growth that its enterprise or geographical location may warrant, the analysis of the survey discloses.

Meet Monsieur Gastout!

By MISS DOROTHY DIGNAM

When the morning's mail brings such an interesting letter from an American in Paris, there is nothing to do but to print it. Miss Dorothy Dignam, as her many American friends know, is on leave of absence from the McJunkin Advertising Company of Chicago, Ill. For the past few months she has been travelling in England and on the Continent, always alert for . . . but she tells her own story best!

Paris, France

TO THE EDITOR:

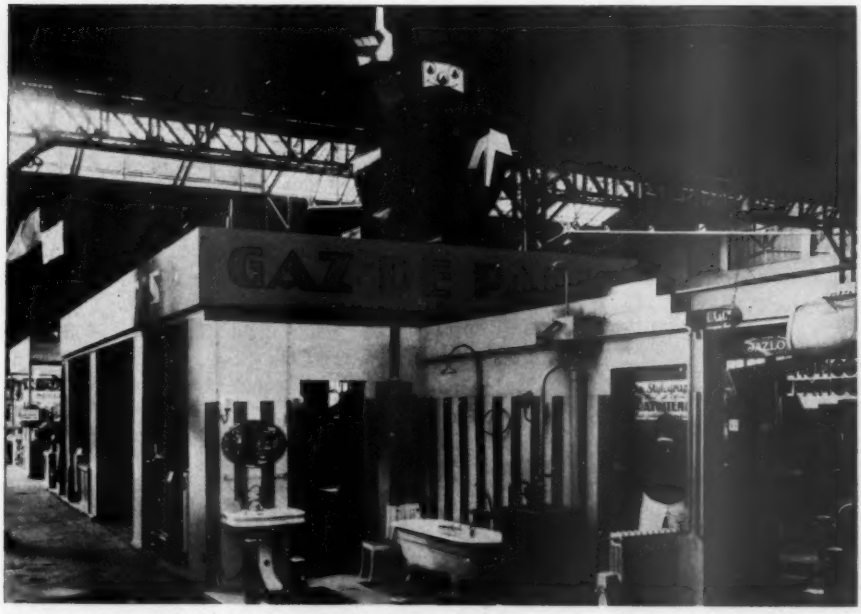
MY first thought over here has been to gather up material and information on the market for and the merchandising of gas and electric appliances, and everything that might bear on increased opportunities for selling appliances.

"Even with all my sleuthing on household subjects, however, I have seen some fine advertising ideas and have all but been bumped by a bus many a time, stopping to gaze at posters. Poster art is greatly advanced over here and all nationalities seem to have a try at designing. The French are rather delicate, but blend their colors strikingly. The Germans are bold and get really startling effects. The Italians, who have been artists for eons, are producing some excellent work, and now the Oriental nations are taking part. I saw just this morning a new telephone poster done by a Japanese; no little cherry trees and pagodas, but a strong modernistic handling of reds and blues and greens. Poster advertising is so pupular that they tell me it is very difficult to get space in centers like Paris. Some firms will only guarantee a ten-day showing on each piece of paper and this makes printing bills rather high.

"The poster or 'flash-impression' idea has been carried out quite generally in all Continental advertising, even in magazines and newspapers. French advertising agencies say that the name-and-picture type is the only kind for France because the people here are not educated to read advertising for the information it contains. They skim over it as an intrusion. They deplore the fact that French homemakers will not read the magazines from the back forwards—the way womenfolk do in America. On the other hand, the Paris branches of American agencies, who are putting out the good old reason-why, and how-our-products-works type of copy say that the French or anybody else will read advertising when it is made sufficiently interesting and length of text has little bearing on the subject.

"Some of the best public utility advertising that I have seen is that being done here

Gastout is featured in several booklets



Gastout presides over the Societe du Gas de Paris exhibition at the household show. The booth was designed by Leon Boue

in Paris by the Societe du Gaz de Paris. When I try to sum up why it has impressed me, the secret of the thing seems to be that all their efforts are coordinated. Their advertising has a splendid family resemblance. At the head of the family is 'Gastout'—a fat little *garcon* resembling the gas meter. His name means, literally, 'everything gas' and his particular color is bright red. On all posters, circulars and other printed matter Gastout wears his red ensemble, and you never see anything connected with the Societe du Gaz de Paris that Gastout does not sponsor with his likeness. Even at company exhibitions at the big household shows and fairs, a gigantic meter-boy presides over the gas section of the display.

"The Societe du Gaz de Paris merchandises and rents appliances. It has 14 stores and three demonstration centers. Most of the advertising, however, is confined to general publicity on the use of gas—cook with gas, heat water with gas, etc. Poster space is used on the kiosques along the boulevard —900 of them. The kiosque is the corner newstand and has a small tower to indicate its position. The space on the outside of the tower is let for advertising, and the

(Continued on page 235)

Michigan's Oil-Natural Gas Situation

BY ARTHUR W. STACE

MICHIGAN, which has a share of just about everything else of the good things of earth, has been mildly thrilling intermittently during the past two years over "spotty" finds of oil and natural gas.

During this period it has experienced two highly localized oil booms with a third boom just getting under way. As results of the first two booms, exploratory wells seeking oil or natural gas have been sunk or are being sunk in 38 out of the 69 counties of the lower peninsula.

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Gas well in Dundee formation, now tied to Continental Motors Corp. gas line

The initial boom was at Saginaw. There, two years ago, town lots, church yards, school grounds, and woodsy outskirts alike were forested with the derricks of drillers. Oil was struck at around 1800 feet in the Berea sands. Production was sufficient to cause the Standard Oil Company of Indiana to build a refinery at Zilwaukee on the Saginaw river at the edge of the field.

Now the boom at Saginaw has subsided. Production has dropped to around 300 to 400 barrels of oil a day. The chief winners at Saginaw were the drilling contractors and certain lucky lease grantors.

The second boom was at Muskegon. It began on December 12, 1927, with the striking of oil at 1628 feet in the so-called Traverse sands on Charles Reeths' farm in Muskegon township just north of the city of Muskegon. It was intensified in the early spring of 1928 when both oil and natural gas were struck in considerable quantities at a depth of around 2048 feet in the Dundee sands in this same Muskegon township.

The finds at Muskegon caused a quick shifting across the state of drilling rigs from the declining Saginaw field. And drillers flocked in as well from as far away as Oklahoma and Texas. These drillers did a flourishing business, riding high on the wave of oil and natural gas enthusiasm. Wells were sunk by the dozen.

The early wells were bunched in a close area in Sections 4, 5, 8, and 9 of Muskegon township. Both oil and natural gas were found in the Traverse sands, but the Dundee sands, some 400 feet below, were discovered to be the more prolific producers. Late last year there was a notable extension of the "proved" field into Laketon township, to the west of Muskegon township.

The Saginaw field was entirely an oil field, with just enough natural gas to help raise the oil. At Muskegon, however, natural gas was present in such quantities as to create a natural gas boom as a companion boom to the oil boom. The natural gas boom was spurred along by well owners who had struck "dry gas" and who were, with reason, anxious to develop a market for their product. From the beginning, nevertheless, geologists, including Michigan State Geologist R. A. Smith, have maintained that

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the Muskegon field is essentially an oil field with large quantities of natural gas, and that the gas must be carefully conserved to assure the recovery of the major part of the oil.

During last summer and fall, the owners of oil wells seemed to have an advantage over the owners of dry gas wells. This was because there was an immediate market for the oil as it flowed from the wells. The Dixie Oil Company, a subsidiary of the Standard Oil Company, established a pipe line. This gathered up the oil from the wells and carried it to the nearby railroad where it was poured into tank cars for shipment to the Standard Oil refineries at Whiting, Ind., and Zilwaukee, Mich.

The price was originally $1.50 a barrel, which later was cut to $1.26 a barrel.

There was no immediate market for the natural gas, however. In September, the Muskegon Traction and Lighting Co.—which had been furnishing Muskegon with manufactured gas—opened a pipe line to the field and began to supply its customers with natural gas. The Continental Motors Corp. completed its own industrial pipe line a little later. Then came the West Michigan Consumers Co., a cooperative organization of manufacturers and well-owners, and finally the Muskegon Pipe Line Co. The three last-named are all supplying industrial and boiler gas. The combined drag on the field at the end of January was around 15,500,000 cubic feet a day. Estimates of the future life of the field at this rate of usage range from six months to five years.

All producers of dry gas and of casing head gas have not found a market. There has been much talk of organizing pipe lines to carry natural gas to other western Michigan towns, among them Grand Rapids, Grand Haven, and Holland. The limited size of the present proved gas field and the failure to discover available reserves have, however, not been encouraging to investment along these lines.

As new Dundee oil wells came in toward the close of 1928, the standing of the Muskegon oil field grew stronger. Particularly was this true when wells sunk into the Dundee formation in Laketon township, immediately west of the Muskegon township proved area, began to produce Dundee oil in large volume.

In January such strikes were made in Laketon township that the daily production of oil in the Muskegon field was doubled and trebled. It rose to 4000 barrels a day, then to 5000, and then to more than 6000. From January 9 to the end of the month, the average load carried by the Dixie Oil Co. pipe line was more than 5100 barrels a day.

The first week in February this mounted even higher, going up on one day to 8500 barrels. The potential production of completed wells at that time was figured at above 12,000 barrels.

Muskegon was happy! So were the well owners! So were the prospectors! All saw a rich oil harvest in sight—a harvest growing larger with every new well brought in.

Then on February 6 came paralyzing disaster to the oil boom. It was in the form of a ukase from the Standard Oil Company of Indiana. The Standard Oil Co. had been taking all oil offered, paying for it at the rate of $1.26 per barrel. Apparently the Standard Oil Company considered Muskegon oil good oil.

But, no!

Here is what the ukase said in effect:

"Beginning on February 7, we will pay only 50 cents a barrel instead of $1.26 for Muskegon Dundee oil. And we will take only 10 per cent of the amount we have

Laying gas line of Muskegon Traction & Lighting Co. from fields to Muskegon

Collection line for gas laid by Hope Engineering Co. for West Michigan Consumers Co.

A gasser of the Lake Shore Petroleum Co. Natural refrigeration of pipes is shown

been taking. Moreover, we will take this 10 per cent only for a limited period."

Crash! There went Muskegon's oil boom for the time being at least. Wrecked at the heighth of its stride!

The Standard Oil Company explained its action through a vice-president. The company had found, he said, that the Dundee crude oil "has not only a high sulphur content but also some other chemical ingredients which have baffled the company's research experts."

The company claimed that it had not been able to get satisfactory commercial gasoline out of the Dundee crude oil. It said the oil was good only for fuel oil which sells around 40 to 50 cents a barrel.

As a slight consolation, however, the company stated that its research experts were still working upon the Dundee crude oil in the hope of finding a way to develop a better and more lucrative product from it.

Oil from the Traverse formation is pronounced pure and sweet, but oil from the Traverse formation forms only about 600 barrels of Muskegon's 6000 to 7000 barrels daily flow.

So at this writing, mid-February, the Muskegon oil situation is badly upset. Operators are having tests of the Dundee oil made by other refineries and there is talk of establishing a Muskegon independent refinery.

Standard Oil's explanation of its unquestioning purchase of all oil offered up to February 6 is that it could afford to take the Dundee crude oil and experiment with it in the hope of eliminating its impurities and the resultant "knock" in its gasoline as long as this oil was coming in comparatively small quantities. But when the daily supply mounted up to 6000 or more barrels and was still rapidly increasing, that put another face on the matter.

The proved Muskegon oil and gas field remains comparatively small. Dry wells have reduced the Muskegon township proved area to about three square miles. Both oil and natural gas are found in this area, and it is the principal source of Muskegon's natural gas supply.

The Laketon township area, just west of the Muskegon township producing field, is not yet sharply defined, but scattered dry holes indicate it is not of great extent. It has been a more promising producer of Dundee crude oil than the Muskegon township area, but has not shown itself strong in natural gas. A summary, made on February 9, showed the following situation in the Muskegon field:

Nature	Muskegon	Laketon	Total
Oil wells	101	10	111
Gas wells	30	2	32
Dry holes	26	6	32
Abandoned	7	4	11
Drilling	12	13	25
Spudding	4	6	10
Rigging	4	3	7
Fishing	1	0	1
Locations	35	22	57
Shut down	12	21	33
Total	232	87	319

Neither oil nor gas has been found in Muskegon county outside the rather restricted limits of the present "proved" field

in Muskegon and Laketon townships. Of 17 wild cat wells, four have proved dry, four have been shut down, and nine are in various stages of development.

The third boom mentioned at the beginning of this article as just getting under way is in the Isabella-Midland field in Central Michigan, between Mt. Pleasant and Midland. This field is about 30 miles northwest of the Saginaw field, on State Highway M-20 which runs irregularly across Michigan from Bay City to Muskegon.

The Pure Oil Company has three producing oil wells in the Isabella-Midland field, the Chippewa Oil and Gas Company has one producing well which came in on January 28 last with an initial flow of 900 barrels a day, and F. W. Stork, trustee, has one well which is flowing 160 barrels of oil a day. Half a dozen other wells are drilling. The oil has been pronounced free from harmful ingredients.

There is some natural gas in the field—just about enough to flow the oil.

The information which led to the discovery of oil in the Isabella-Midland field came from brine wells. The field is in the territory from which the Dow Chemical Company of Midland draws the brine from which it manufactures its various chemical products, including a large part of the aspirin used in the United States. The brine wells are sunk about 1100 to 1500 feet, while the oil wells go down to the Dundee sands, which here are at a depth of about 3500 feet because of the dip of the characteristic Michigan geological "bowl structure."

The Pure Oil Company, the big operator in the Isabella-Midland field, is controlled by the Dawes interests of Chicago, former vice-president Charles G. Dawes being a member of the group. The Pure Oil Company is declared to be the largest lease holder of Michigan lands that appear to have oil producing possibilities. Its leases are said to cover hundreds of thousands of acres.

Wild cat wells are being sunk in all sections of the lower peninsula of Michigan. The most encouraging finds thus far in western Michigan are as follows:

Mason county—Two wells drilled near Walhalla struck natural gas with good rock pressure at a depth of 3300 feet in the Niagara or lower Salina sands. It is proposed to pipe the gas to Scottville and Custer, the nearest available markets. A little oil was found with the gas. Two other wells are being drilled there.

Oceana county—Small shows of oil and gas found.

Newaygo county—Show of gas and oil in Traverse sands.

Kent county—Signs of oil at 2500 feet in well east of Rockford.

In southeastern Michigan a number of dry holes have been drilled and the following hope-giving signs have been encountered:

St. Clair county—Diamond Salt Company drilled in two gas wells in December, 1927, at about 2500 feet in lower Salina sands. Is using the gas for boilers.

Macomb county—Several wells drilling near Mt. Clemens and Marine City show gas and oil sufficient to encourage the St. Clair Gas and Oil Company in its operations.

Lenawee county—Oil struck at Deerfield in two wells in Trenton formation at about 2200 feet. They are small "pumpers" producing together about 25 barrels a day.

Results of explorations thus far completed seem to indicate that the lower peninsula of Michigan has considerable oil and natural gas in spots. The trouble is in hitting the right spots. And even if the right spot is hit, there is always the question whether the oil or gas it produces will ever pay the accumulated cost of production.

New Filing Classification for Bulletin of Abstracts

THE Association announces the publication of a revised filing classification for the **Bulletin of Abstracts**. The March issue of the **Abstracts** contained the new classification, which saves time in filing and assures accuracy.

The **Bulletin of Abstracts** is issued bi-monthly and a year's subscription costs $7.50. This is one of the oldest services sponsored by the Association. For those who desire to keep up with developments in the industry as reported in the technical press, this service cannot be duplicated.

Valuable Mixed Gas Research Data Are Now Available

THE work on mixed gas research which has been in progress for more than two years in the American Gas Association Laboratory at Cleveland has arrived at the stage where much valuable information and data are available. As this work has progressed, it has been found to involve many unexpected ramifications and many researches have been made that were not anticipated when it was undertaken.

Conducting tests in mixed gas research program at A. G. A. Laboratory

This work to date has covered combinations of practically every gas used for commercial purposes. Its magnitude and the voluminous nature of the reports and data have caused the Committee on Mixed Gas Research to conclude that the publication of one report covering the whole subject is impracticable. Besides, such a report would be so immensely voluminous as to be unwieldy and unnecessary for those who are considering specific problems involving certain series.

This work has been done for all member gas companies and the resulting information is at the disposal of any of them who are interested. It is the opinion of the committee that there are two ways in which the experiments and researches can be made useful to the industry.

The first is by extension work conducted at the plants of interested company members by representatives of the Cleveland Laboratory who are familiar with the subject. Work of this kind is already under way with a large gas company where natural gas is at times mixed with other gases, and studies and investigations of the utilization and service conditions there are in progress. One or two other companies have already indicated their desire for similar service. This will be made available to the member companies to the extent of the Laboratory's resources and personnel. In such cases the company desiring this work will, during the present Association year, be requested only to refund the traveling expenses of the Laboratory representatives and a reasonable allowance for their board while in the company's service.

The second plan is to invite interested member companies to send representatives to the Laboratory to examine the data on file there which include information of value in practically every mixed gas problem. This plan would involve only the expenses of the company's representatives.

It is believed by the committee that through these two methods the results of the thought and time and money of the past few years can best be capitalized and made available to the industry at large.

A. G. A. Headquarters awaits with interest any requests either for extension work or for inspection and study of the data at the Laboratory. Communications in respect to either or both of these alternatives should be directed to Alexander Forward, managing director, American Gas Association, 420 Lexington Ave., New York, N. Y.

H. Hobart Porter, engineer and industrialist, has been elected chairman of the Engineering Foundation, of New York.

The new chairman is President of the American Water Works and Electric Co.

C. W. Person Leaves A. G. A. to Join The Koppers Company

C. W. Person

CHARLES W. PERSON, for nine years secretary of the Publicity and Advertising Section of the American Gas Association, has resigned his position to become affiliated April 1 with the research organization of The Koppers Company, Pittsburgh, Pa.

Mr. Person joined the headquarters staff of the American Gas Association in November, 1919, as the first secretary of the Publicity and Advertising Section. He inaugurated the first publicity and advertising services sponsored by the Association, and was active in organizing the committees on public utility information. He was one of the founders of the Public Utilities Advertising Association and for several years has been a director and treasurer of that organization.

Mr. Person is widely known in the gas industry and has many friends among the advertising men of the electric light and power, street railway and telephone industries. For the past two years he has devoted part time to the work of the Joint Committee on National Utility Associations.

On March 1 a testimonial dinner was tendered Mr. Person at the Engineers Club, New York, with the following in attendance: Oscar H. Fogg, R. E. Livingston, and Henry Obermeyer, Consolidated Gas Company of New York; Earle W. Hodges and Frank L. Blanchard, Henry L. Doherty and Co.; George F. Oxley, Ernest Greenwood, and Renaud Sherwood, National Electric Light Association; Labert St. Clair, American Electric Railway Association; Alexander Forward and Howard F. Weeks, American Gas Association; J. S. S. Richardson, Joint Committee of National Utility Associations; J. M. Bennett, Philadelphia Electric Co.; C. E. Wetzel, The United Gas Improvement Co.; F. W. Crone, New York Edison Co.; Irving M. Tuteur, McJunkin Advertising Co.; A. C. Watt, Allied Power and Light Co.; R. E. Haas, Columbia Gas and Electric Co.; C. E. Neil, North American Co.; Alfred Fischer, Semet-Solvay Engineering Corp.; and Harold O. Andrew, *Gas Age-Record*.

Many Companies Use New Home Builders' Booklet

MORE than 100 companies have purchased 7000 copies of the Association's booklet entitled "Hints for Greater Comfort in Your New Home," which was announced during the latter part of 1928. Orders ranged in quantity from 10 to 1100, and all companies report that the book is welcomed by prospective home builders in their territories.

The usual new home, when equipped with a reasonably complete installation of gas appliances, will utilize ten to 15 times the average domestic consumption of gas. Only a few such homes are necessary to make an appreciable increase in the annual domestic sales of gas, and the best time to sell the customer on the completely equipped home is before or during construction.

This book has been designed to inform the home builder in a pleasing way of the many new services which gas performs today in the household, and at the same time to give complete information on the appliances especially recommended for his new home.

The book is intended to be presented personally to the home builder, wherever possible, and has been made in loose-leaf form so that only those appliances need be incorporated which are suitable for the home in question.

Space has been provided on the pages referring to the range, water heater, fireplace heater, incinerator, refrigerator, laundry equipment and house heating equipment, so that gas companies can "tip in" the manufacturer's folders describing the particular appliances recommended.

In view of the large quantity printed, there is an especially low price on the booklet, as follows:

First 100 copies .....25¢ each
All over 100 copies .....20¢ each

Address orders or request for sample copy to J. W. West, Jr., A. G. A. Headquarters.

What Can Research Do For Us?

BY H. C. ABELL

The address which Mr. Abell presented at the Pacific Coast Executive Conference of the A. G. A. in February was a splendid and masterful survey of the research problems of the gas industry. We regret that we are able to present here only a brief abstract of his remarks. However, other important points made in the address have been treated in articles appearing in past issues of the Monthly.—Editor.

THE gas industry cannot remain stationary. It must either retrograde or advance when in competition with other sources of heat agencies. To advance it must initiate more economical methods of producing gas, as well as transmitting and distributing it, and must obtain uses for many hours in the year and methods of use during the hours of the present light consumption.

The problem of the maximum use of the investment is a large factor in cost because a fair rate of return, renewals and replacements, and taxes are based on investment, consequently the appliances and apparatus for utilization must be developed most efficiently and in the greatest number to take on the greatest diversified business to improve the use of the present financial outlay.

Mr. Abell is vice-president of the Electric Bond and Share Co., New York, N. Y.

The competition which the gas industry has from coal, oil and its by-products, electricity, and other agencies is a problem which must be met both now and in the future. This problem is a part of the study and program of the Committee on Economic and Engineering Survey.

In the domestic and residential uses, outside of house heating, the matter of convenience, entailing no handling of waste products, ashes, etc., health, time of actual application of heat to obtain the desired result, the readiness with which the gas is obtained, etc., places the use of gas in the desired class. Electricity is a competitor in this regard, but I believe it is seriously handicapped in competition with gas for the above purpose due to its cost.

The electrical investment per million B. t.u. delivered at the consumers' premises is about twice or over that of gas and the thermal efficiency from the fuel is about one-

One of the most significant developments in recent years has been the realization by industry and business that scientific research can play an important role in shaping the future. The laboratory and the work of the scientist have indeed come into their own.

third or less than gas. The transmission of heat by means of gas compares most favorably with the transmission of electricity.

The higher efficiency of electrical appliances cannot overcome this handicap. We must, however, not lose sight of the fact that the electrical industry is always most diligently at work on research problems, and is greatly improving the cost of its service to the ultimate customer, including reductions in the former costs of the appliances, reducing the time of application to accomplish a desired result, improving the thermal efficiency of generation, decreasing its investment per unit of demand, and increasing its use through interconnection, etc. Detailed figures of comparative costs of electric and gas investments and thermal efficiencies, and the transmission of heat by both gas and electricity, etc., have been given a number of times in reports and papers submitted to the American Gas Association, and are a part of the permanent record, which can be looked up if desired; however, as indicated, the electrical industry is constantly improving its results in almost every way. Any improvement in the load factor which might be common to gas and electricity still places gas on the same relative competition basis, but as the output cost of gas per million B.t.u. is less than can be obtained electrically, gas would still have that advantage, unless the gas industry, through its delay in research development, permits the electric industry to obtain increasing advantages. The gas industry must contrive to keep pace with the electrical development on a competitive basis, both in regard to higher efficiency apparatus and appliances at the lowest relative cost, and in the creation of new devices and uses.

The average residential business yields a yearly load-factor of from 25 to 30 per cent based on the maximum hourly demand and about 40 to 70 per cent based on the maximum day's output.

Assume a company is receiving $1.20 per MCF for gas and that the actual output cost is 30 cents per MCF, that the load-factor is 50 per cent, and that the present density of sales permits the company to earn a fair rate of return in addition to all other expenses in accordance with public regulation. The total cost represented by the 90 cents received in addition to the output cost of 30 cents per MCF will not increase in total dollars to a great extent by bettering the load factors, therefore if the load factor were doubled, this expense would be approximately half of its present cost per thousand cu.ft.

Assuming, for illustrative purposes, that the company could sell gas on a 100 per cent load factor basis instead of 50 per cent and that the output cost remained approximately the same, 30 cents per M, then the price it would receive for gas would be only 75 cents per M, to obtain the same relative revenue above actual output cost of gas. The fixed part of the cost of gas would only be approximately 45 cents per MCF instead of 90 cents.

If the load factor were increased to 75 per cent and the total cost represented by the 90 cents per M cu.ft. of the $1.20 over the output cost of 30 cents per MCF, then the fixed portion would be 60 cents, or the average sale price 90 cents, instead of $1.20 per MCF.

These figures are merely presented to indicate how necessary it is to increase the use of the investment more hours per year without increasing maximum demands to a point requiring more investment and, therefore, greater cost. To increase the load factor will put any public utility on a much better basis to compete for the higher priced and more profitable business.

I hope that I have shown that the program of today is essentially a research problem and that some actual work should be started, because I feel that I cannot be so wrong in my opinion in thinking that much can be accomplished by a direct concentrated study of those details which if improved will not only save the industry an expenditure of a large sum of money, but the ultimate result will be greatly to improve the net earnings, which in effect will much

(Continued on page 244)

Constructing World's Largest Gas Holder

A FEW years ago, the gas industry thought the maximum had been reached when 15,000,000 cu.ft. gas holders were built. Today a 20,000,000 cu.ft. holder is now serving Chicago and there is no apparent limit to the size of gas holders that will be built in the future.

Accompanying this article is a diagrammatic drawing of the 20,000,000 cu.ft. waterless holder built at the 73rd Street distribution station of The Peoples Gas Light and Coke Company in Chicago. The drawing shows the particular dimensions, especially noteworthy since the holder is for the present the largest in the world. The next largest holders are of 15,000,000 cu.ft. capacity, and there are very few of them.

Air view of the largest gas holder in the world, showing aviation markings

The Shell and Piston

The shell of the holder is the same as any close-fitting cylinder. It is analogous to an enormous automobile engine cylinder turned upside down and set on what is normally called the head. The pressure exerted by the expanding gas (after the explosion) tends to push on the piston until the pressure under it is the same as the outside pressure plus a slight difference due to the weight of the piston.

In the case of the holder, the piston, instead of being cast iron as in the automobile engine, is built of structural plates and shapes. The "rings" are sectional, and tar is used for sealing and lubrication instead of lubricating oil as in the automobile engine. As there is no large differential in pressure, no piston rings are necessary.

The gas pressure necessary to raise the piston is supplied by the pressure in the transmission mains and pumps. Boosters pump the gas from beneath the piston and force it back into the mains. The holder weighs about 5500 tons, most of the weight being concentrated around the periphery of the cylinder. The holder rests on a concrete pad of approximately the same dimensions as the holder and varying in thickness from 18 inches at the edge to six inches at the center, and containing about 3000 yards of concrete. The pad is carried on 420 concrete pedestal piles and 60 ordinary concrete piles.

Driving the Piles

The piles are driven as follows: The mandril and heavy steel casing are driven into the ground to a penetration of five blows per inch—in this case about 30 ft. The mandril is then withdrawn and ⅓ to ½ yard of concrete is dropped into the casing. The mandril is returned and driven until all concrete is outside the casing, making an enlargement of pedestal on the bottom of the pile. The mandril is again withdrawn and a light steel casing and reinforcing rod dropped into the casing and the hole filled with concrete. The weight of the mandril is put on the concrete and the casing withdrawn.

On account of the large area of the walls of the cylinder, the wind strains become enormous. At high winds the uplift on the windward side of the holder is greater than the normal downward load; therefore, the structure must be anchored down to the foundation to withstand the uplift. This is done with fifty-six 4¼-inch foundation bolts fastened to the I-beams which in turn are tied into the concrete pedestal piles by the reinforcing rods. The bolts, I-beams, and reinforcing rods are all enclosed in a concrete pier.

When the pad is about completed, the steel bottom of the cylinder is started. To facilitate the work and to secure absolute tightness at the bottom, it is built about 30 inches off the foundation pad and then lowered. When completed, the bottom is one sheet of steel approximately one and one-half acres in extent and weighing more than 200 tons. It is lowered onto the foundation pad with manually operated reverse jacks. On this holder, the lowering of the bottom required only 30 minutes.

Next, the first section of the guide frames is erected. This consists of heavy I-beams which form the corners of the polygon. (The holder does not have a round circumference, but is 28-sided.) The inside of these beams form a structure against which the rollers of the piston rest.

All the materials for the bottom, piston and roof are handled by a large trammel derrick, moving on a circular track. The piston is built up of 28 trusses which carry the piston plating. These trusses are approximately 140 feet long and 40 feet high at the outer end. At the center they are riveted to the central hub and at the outside extremity rest through rollers against the columns of the guide frame at the corners of the polygon.

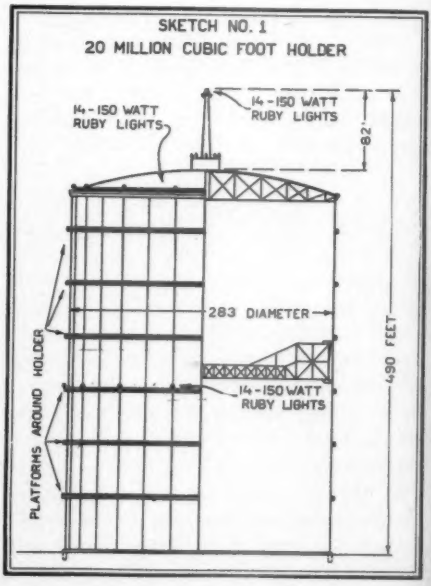
This plating separates the gas underneath from the air above and must be absolutely gas-tight. To make the piston gas-tight against the shell, movable rubbing bars are provided which are immersed in tar. The rubbing bars, while carried by and fastened to the piston, are free to move, the force against the wall of the cylinder being gauged by the weight levers.

Sealing the bottom of the rubbing bar to the piston is a strip of especially prepared canvas. This canvas forms the bottom of the tar cup but does not interfere with the movement of the rubbing bar. The entire cup is filled with special tar which has a thickening point below zero degrees F. and is at a depth above the rubbing bar sufficient to overcome the pressure thrown by the piston, about six ounces or 10 inches water gauge.

With the piston complete, the roof is assembled.

In this kind of construction the roof of the cylinder is built first. The roof consists of 28 trusses somewhat similar and placed immediately above the piston trusses. For the purpose of erection the roof trusses are fastened by temporary bars to the piston trusses. The top of the roof trusses is covered by steel plates caulked tight to keep out the weather.

The roof is then forced up by the piston as the wall of the cylinder is built underneath. When the desired height is reached,

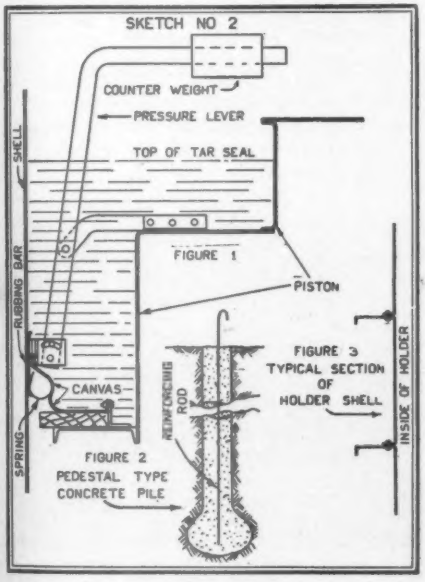


Sketch One

the roof trusses are riveted to a guide frame and unfastened from the piston.

While the roof is being completed, the first section of the cylinder wall plating is being placed. These plates are about 31 feet long (the distance between columns) and are riveted to the columns and to each other. When the first few rings of the side plates have been riveted in place and caulked, air, under pressure, is introduced under the piston which raises it and the roof to the height of these side plates. Then from a scaffold hung from the rising piston another ring of plates is assembled and riveted and the operation repeated until the desired height is reached. The roof is then riveted to the cylinder frame and cut off from the piston. The air is released from under the piston and it drops to the ground level, the speed being determined by the rate of air release.

During the time of this part of the erection the piston was raised an average of six sheets a day, which means that the 28 plates were hoisted and assembled, 11,000 rivets driven, and approximately 1100 feet caulked every 80 minutes.



Sketch Two

The holder is provided with two electrically operated elevators, one from the ground to the top of the holder and one from the top down to the piston. The outside elevator has a capacity of 1500 pounds and a speed of about 125 feet per minute. It is entirely enclosed in a tube running outside the holder.

The interior elevator is about the same size and capacity, the car hanging by cables from the operating mechanism on the roof and held in place by cable guides. Thus, the car will travel the distance from the roof to wherever the piston may be.

Fourteen special pumps, driven by 7½ horsepower motors, circulate the sealing tar. Seven pumps lift the tar from the bottom well back to the reservoir which supplies tar for sealing the piston. The tar which passes the rubbing bar on the piston drips back to the well. The other seven pumps take the surplus tar and water accumulation to a separating tank where the water is separated from the tar. Thus, a continuous circulation is maintained.

In cold weather the tar is kept soft and the water accumulation kept from freezing by 56 gas burners placed two to a bay about three feet inside the shell.

In connection with the holder, there are gas pumping facilities with a potential output of 36,000,000 cu.ft. of gas daily.

In addition to being the world's largest gas holder, the huge structure is further distinguished as being the first comparable type of industrial structure to be marked and lighted according to official aeronautics specifications for the benefit of air traffic.

Lighting, painting, and marking have been worked out with the aviation authorities at Washington in the Department of Commerce, and with the local aviation authorities and interests, and have been officially approved. The body of the holder is painted a sage green. The upper part of it is encircled by alternating 10-foot bands of chrome yellow, black, and chrome yellow for visibility.

A 70-foot tower surmounting the holder carries a 1000-watt electric light—red—vis-

ible at 15 miles in clear atmosphere. Additional red-lighting is provided by 42 150-watt lamps: A cluster of 14 near the top of the tower, a band of 14 around the cornice, and another band of 14 lower down.

Across the top of the holder, which is 283 feet in diameter, is a broad arrow pointing to the municipal airport two miles to the northwest and an inscription: "Chicago Municipal Airport, 2 Miles," in 30-foot letters. Arrow and lettering are in chrome yellow on a black background. The arrow is floodlighted to bring out the "guide post" marking for easy visibility from the air.

An unusual feature of the lighting is that it is turned on and off automatically, as needed, by an astronomical clock and a photo-electric device controlled by the intensity of light in the surrounding atmosphere.

Status of Summer Courses for Home Service Workers

FOR the past two years the American Gas Association has cooperated with Teachers College, Columbia University, New York, N. Y., in offering a three weeks' course in the household engineering department for the purpose of training home service directors and women selling gas appliances. In addition to the work of testing gas equipment, lectures have been given on physics as applied to the household, food and nutrition, etc. Demonstrations on household management and home decoration have been given and several field trips arranged. This course has attracted a great many students and has filled a long-felt need of adequately training women who give demonstrations on appliances, as well as sales people. It is probable that this course will be continued during the coming summer of 1929.

In addition a course in domestic gas appliances has been tentatively arranged to be given at the American Gas Association Testing Laboratory at Cleveland, Ohio. Inasmuch as a great many of the home service directors are already adequately trained in food and demonstration work and have found it difficult to give the three weeks' time necessary for the Columbia course, the laboratory course will meet a real need.

The laboratory course will include lectures and demonstrations covering the effects of various gas service conditions. Lectures and demonstrations of the operation of insulated and non-insulated ranges, tank, instantaneous, and storage type water heaters, construction and control, various types of room heaters, their operation and selection for proper usage, short discussion of house heating, mainly concerned with controls, discussion and explanation of miscellaneous appliances such as refrigerators, incinerators, laundry dryers, etc.

At the present time both courses are under consideration. A letter was sent to all company members sometime ago calling their attention to the two proposed courses and asking whether or not they would send anyone to either or both courses. Upon this reply depends whether or not these courses will be run.

Gas Sales Increase

A SEVENTY per cent increase in February sales over the same month last year, a gain of 140 per cent in domestic meter installations in the last four months, with gas sales for January 50 per cent greater than a year ago, were reported recently by the Rio Grande Valley Gas Company.

More than 10,000 people attended the annual Parent's Exposition in New York. The display of the Consolidated Gas Co. attracted great interest

The Advantages and Limitations of Conversion Equipment

BY C. GEORGE SEGELER

THIS article is the first part of a chapter on conversions which appears in the third printing of the second edition of House Heating, one of the American Gas Association's Industrial Gas Series books. This third printing is just off the press, and is a condensed "interim edition" to supply the demand for house heating data during the time of preparation of the third regular edition.

This conversion chapter is essentially the only new material in the edition. Because of its timely importance, we will present it to our readers in three sections. The second and third installments will be given in the May and June issues of the MONTHLY.—Editor.

ACCORDING to recent discussions at the various sales conferences, the field for gas house heating in the manufactured gas territory is roughly limited to those home-owners whose income is at least $5000 a year, a group representing not more than two per cent of any gas company's meters. Such a limited field is further reduced by the fact that a great many have already installed oil-fired equipment, at a very considerable first cost. The remaining prospects can be divided into two classes, differentiated by their ability to invest the relatively large amount of money required to make an all gas designed installation.

For those customers who would like to, and who could afford to pay for gas house heating without wishing to incur the cost of an all gas installation, the conversion unit is an attractive idea. This is particularly true where natural gas is available.

It is not only a question of cost that enters the customer's mind, but also the question of tying himself down to one fuel. A great many customers rightly or wrongly feel that there might be a gas shortage at some time, and they often feel very much reassured when an alternative method of heating their house is left them. This would be true where conversion systems have been installed.

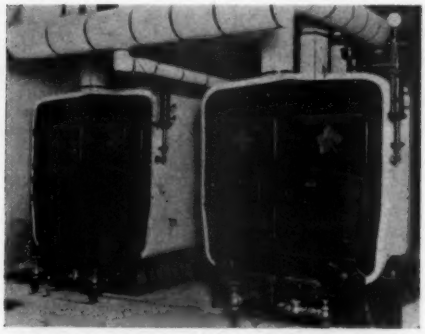
It might be added that the cross-connected units would also provide some flexibility of fuel, but the latter plan has a disadvantage in that a great deal more space is required, and that the extra investment is very much higher.

The gas companies throughout the country have no uniform policy with respect to the conversion system, and it is important to understand the local situation in each case before entering upon an active campaign of conversion burner selling. Where the gas company actively favors the use of conversion equipment, cooperation between the agency for merchandising conversion equipment, the heating contractors, and the gas company ought to be very close, and ought to favor the fullest development of this class of business.

In any event, conversion equipment should always be sold with a clear understanding of its advantages and limitations. These can be summarized as follows:

Conversion equipment has an outstanding advantage in lower first cost and in using existing coal equipment. At the same time it possesses a disadvantage in the fact that it is more difficult to obtain the same degree of operating efficiency that can be obtained with equipment especially designed for gas. Most of the conversion burner equipment manufacturers have recognized these fundamentals, and are preparing their catalog material, as well as sales talks, to conform to a fair and proper presentation of the picture. In spite of this, some of the manufacturers have persisted in claiming unduly good results. In the final analysis, such claims are unnecessary, because of the self-evident value of conversion equipment.

The attitude of the gas companies towards conversions, as has been mentioned before, is changing rapidly, and most of the gas com-



A conversion installation

panies in the manufactured gas territories, as well as in the natural gas field, recognize the growing importance of the converted system, and are making provision for the proper supervision of conversion installations. This movement will continue to grow as the companies try to extend their field of house heating sales prospects. It will be necessary to carry their work beyond the preferred group into the lower income class. It will then be doubly important to have available conversion equipment which will be low in price, economical to operate, and which will be free from service troubles.

With the necessity for A. G. A. approval on all gas-designed equipment for house heating, it seems only fair that the conversion equipment should also be subject to some restriction. As a general statement, conversion equipment should meet fundamental requirements for safety and proper installation. That is to say, as far as possible converted equipment should possess the same desirable characteristics as a gas-designed system, such as freedom from carbon monoxide, freedom from burner operating troubles, gas tightness in the case of warm air furnaces, no hot spots which might cause excessive temperature rise to surroundings in the room, and so forth.

The limitations of conversion equipment are further considered in detail below.

1. Efficiency. The statement has been made that in general the efficiency of conversion burners is low. The causes for this are:

(a) Inadequate heating plants.

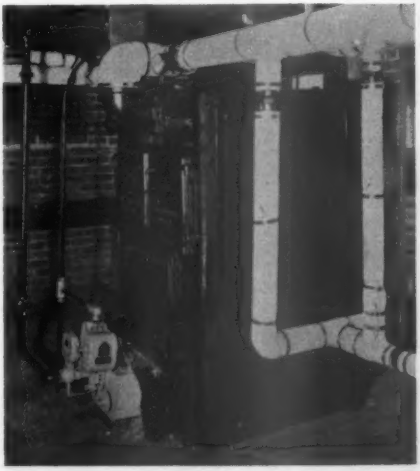
(b) No control of air supply to the burners.

(c) Insufficient heating surface, especially in the indirect flue passages.

(d) Burner capacity not properly proportioned to the coal equipment capacity.

The problem of efficiency must be met by a study of burner design and methods of conversion installation, as well as a conservative policy in making recommendations and estimates for size of equipment and amount of gas to be used per season. The experience of recent winters with the best of conversion installations has shown the probable operating results to be conservatively from 5 to 10 per cent more gas per season than with gas-designed equipment.

It is rather striking to estimate how long it would take before the premium paid in extra first cost of a gas-designed system would be absorbed by the increased operating cost of a conversion system 10 per cent less efficient. If the gas bill for the season should be $300, then the converted system would cost $330 a year to operate. Thirty dollars a year difference would require ten years to make up the difference between a first cost of $650 for a gas-designed system and $350 for a converted system.



Another conversion job

2. Poor service to the customer. In this connection it has been found that many conversion systems are installed without providing the customer with the same degree of automatic service that he will receive through gas-designed equipment. The customer's installation should be equipped with safety pilots, gas pressure regulator, necessary pressure and temperature control valves, a room temperature thermostat, a back draft diverter in the flue, possibly a low-water cutoff in the case of a steam boiler, and so forth. Moreover, the customer should be free from service difficulties due to back firing of the burner when under automatic control.

There is no excuse for rendering poor service to a customer, and manufacturers of modern conversion equipment have recognized this fact. The newer systems are equipped with the same types of controls that any good gas-designed system will have.

3. Cooperation with heating contractors. This most important consideration is brought up here because of the greater difficulty encountered with respect to conversion equipment. Not all conversion equipment now on the market is so fool-proof in construction and design that it can be installed by anyone. From rather unfortunate experience, therefore, many gas companies feel that while a good conversion can be made with proper engineering supervision of the work it has not been possible for them to secure the necessary cooperation from the plumbers and heating contractors. By necessary cooperation is understood the restriction of sales and installation to such equipment as is approved by the gas company.

It is not possible for the local heating contractor to decide for himself in most cases whether or not a given make of conversion system can be satisfactorily used in this or that locality. The gas company bears the brunt of servicing and complaints with respect to all manner of gas house heating systems. It is in their interest, therefore, for they must continue with the customer year in and year out, to insure perfect satisfaction from all gas equipment which is installed. This fact cannot be reiterated too many times, nor can the importance of it be overestimated. It is essential to the success of gas heating that the heating contractors cooperate to the extent of selling only such equipment as is approved by the gas company. No other policy will prove satisfactory in the long run.

Cooperation with heating contractors is largely a matter of educational effort on the part of a gas company. It should be the company's object to clearly define its purposes and its methods so that the contractors may understand and be given an opportunity to merchandise suitable gas house heating equipment. Some of the larger companies have taken the stand that every effort ought to be made to sell a customer with gas-designed equipment first, and then if it is evident that it is first cost which is the principal element of sales resistance, to try to sell an approved type of conversion equipment. This, however, is a detail which must be worked out for each local situation in accordance with the conditions found.

These, then, are the limitations of conversion equipment. Each of them can be met without undue difficulty in such a way that the gas companies will cooperate with the manufacturers and the heating contractors, and the customers will be assured of satisfactory service.

[To be continued]

Public Utilities Fortnightly

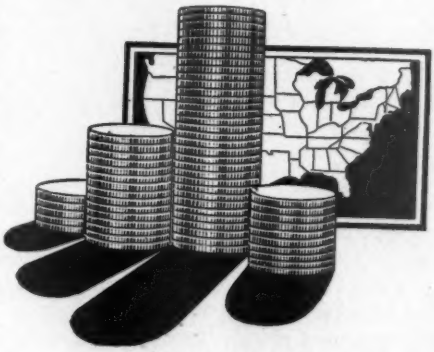
PUBLIC Utilities Reports, which has done such valuable service for years in publishing decisions of courts and commissions in utility cases, is now publishing a fortnightly issue containing some of the more important decisions and including a magazine section carrying popular articles on regulatory problems and allied topics, contributed by prominent men within and without the industry.

The fortnightly issue is published at the subscription rate of $15 per year and contains a large amount of very important and interesting material to those interested in utility problems and especially in regulation.

The Utilities Publication Committee is in the Munsey Building, Washington, D. C.

Utility Financing on the Pacific Coast

BY C. O. G. MILLER



THE first duty of a public utility is to provide good service at reasonable rates. The second duty is to earn and disburse an appropriate dividend on its common stock. If these two duties are fully accomplished, the utility may be said to be perfect.

The quality of service of a public utility is only indirectly affected by its financing, but the earnings of a public utility are largely determined by the quality of its financing.

Fifty years ago in California there was practically no market for local bonds outside of the savings banks, several insurance companies, and a few wealthy individuals. All local bonds were good or bad. There was no middle ground. The fine discrimination now made in values by interest yields, times the interest is earned, life of the bonds, callable features, etc., did not exist. The bonds could be sold at about par or not at all. This condition was the rule with few exceptions up to 1893. Few utilities issued bonds; those that did made an arrangement with some local banker, usually a director of the utility, who looked into the matter carefully or casually as the case might be, according to his knowledge of the corporation's affairs, determined the interest rate, called in a few underwriting friends, and bought the bonds, the large majority of the underwriters keeping them as permanent investments. There were practically only two groups in California that handled bonds.

There seems to have been no fixed rule for the amount of bonds that might be issued on a property. It was largely determined by the company's needs. At that time open end mortgages were unknown in California and I think everywhere. It was the exception for a California public utility to make proper provision for unknown future capital expenditures. Practically all the gas and water companies of the state financed their normal capital expenditures out of earnings, sometimes thereby denying their stockholders a proper return. The present day methods of financing are the same everywhere in this country. Open end mortgages, preferred and common stocks are everywhere well known. A utility corporation which takes care of its capital needs 50 per cent through bonds, 25 per cent through preferred stock, and 25 per cent through common stock is generally considered to be financed soundly. All of these percentages may be varied somewhat and the financing still be sound. The previous history of the utility and its policies, especially if well-defined for many years, have some effect on these percentages but they can be taken, in general terms, as being the rule today.

During the past few years a popular method of financing has been the offering of common stock to stockholders at a price substantially lower than the market.

In recent years many utilities have done more than half of their financing through the sale of common stock, thereby increasing the margin of safety of their bonds and making it easier to sell bonds whenever it is deemed best or necessary to raise money that way.

It may interest you to hear something about some of the early utility issues sold on

Mr. Miller is president of the Pacific Lighting Co.

(Continued on page 241)

NEW SLANTS
on an old subject

Anton Bruehl

A liking for machinery is but one of the characteristics of Anton Bruehl, a well-known New York photographer whose work has won for him a large audience of enthusiastic admirers. Turned loose in a gas plant Mr. Bruehl took some beautiful pictures, four of which we are pleased to present to our readers in this issue of the MONTHLY. Mr. Bruehl has injected into these photographs a definite spirit of originality and has secured the entirely fresh perspective which the subject deserves.

Anton Bruehl

Going Up

Anton Bruehl

Angles and Curves

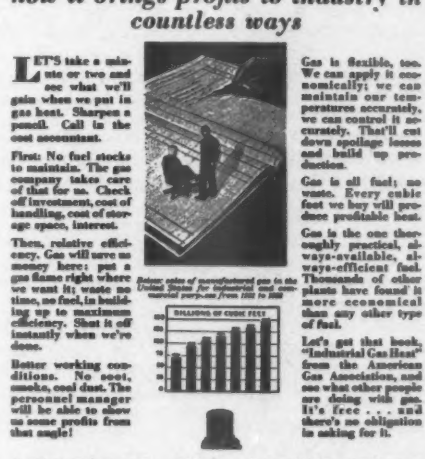
Anton Bruehl

The Ladder

A. G. A. Advertises Industrial Gas In 29 Magazines

IN 1929 the American Gas Association will spend $50,000 to promote the sale of industrial gas by a comprehensive advertising program in class and business publications with nation-wide circulation. This program is under the auspices of the Industrial Gas Section's Committee on Advertising, of which John F. Weedon, of Chicago, is chairman.

The advertising program for 1929 contemplates the use of 29 magazines. Of these, 11 are in metal trades, five in the food products industry, four in the hotel and restaurant field, and one in the ceramic industry. Eight of the magazines can be classed as miscellaneous.


GAS HEAT—
how it brings profits to industry in countless ways
LET'S take a minute or two and see what we'll gain when we put in gas heat. Sharpen a pencil. Call in the cost accountant.
First: No fuel stocks to maintain. The gas company takes care of that for us. Check off investment, cost of handling, cost of storage space, interest.
Then, relative efficiency. Gas will save us money here: put a gas flame right where we want it; waste no time, no fuel, in building up to maximum efficiency. Shut it off instantly when we're done.
Better working conditions. No soot, smoke, coal dust. The personnel manager will be able to show us some profits from that angle!
Gas is flexible, too. We can apply it economically; we can maintain our temperatures accurately, we can control it accurately. That'll cut down spoilage losses and build up production.
Gas is all fuel; no waste. Every cubic foot we buy will produce profitable heat.
Gas is the one thoroughly practical, always-available, always-efficient fuel. Thousands of other plants have found it more economical than any other type of fuel.
Let's get that book, "Industrial Gas Heat" from the American Gas Association, and see what other people are doing with gas. It's free . . . and there's no obligation in asking for it.
AMERICAN GAS ASSOCIATION
420 Lexington Avenue, New York
IF IT'S DONE WITH HEAT, YOU CAN DO IT BETTER WITH
GAS

The March advertisement

The magazines in which the advertisements are to appear are as follows: *Nation's Business, Chemical and Metallurgical Engineering, Electrical World, Baker's Weekly, American Machinist, Heat Treating and Forging, The Foundry, Fuels and Furnaces, Iron Trade Review, Iron Age, Transactions of the American Society for Steel Treating, Industrial Gas, Industrial Power, Manufacturers' Record, Ceramic Industry, American Printer, American Restaurant, Hotel Management, Hospital Management, Cafeteria Management, Tea and Coffee Trade Journal, Spice Mill, Iron and Steel Engineer, Food Industry, and Mechanical Engineering.*

Among the college publications which will be used are the *Daily Illini* of the University of Illinois, the *Michigan Daily* of the University of Michigan, the *Purdue Exponent* of Purdue University, the *Tech* of the Massachusetts Institute of Technology, and the *News Letter* of Johns Hopkins.

The advertising committee has outlined a most comprehensive program. General copy will be alternated with specific copy applying directly to the particular industry to which the magazine reaches. The general copy will pave the way for the more specific copy which follows.

In order that the greatest benefits may be derived from this national advertising the Advertising Committee will publish a brochure describing the campaign and including illustrations of the advertisements to be used. Reprints of the advertisements will be made available for use in direct mail campaigns by individual gas companies and the booklet, "Industrial Gas Heat," is offered as an additional direct mail piece.

Fourth Year of Advertising

This is the fourth year that the American Gas Association has advertised industrial gas nationally. The results secured up to the present time have been most satisfactory. The advertising campaign has been strongly supported by practically all local gas companies that are selling gas for industrial purposes.

J. E. Zimmermann Now Heads the U. G. I. Co.

J. E. Zimmermann

AT the meeting of the Board of Directors of The United Gas Improvement Company held Feb. 27, John E. Zimmermann, chairman of the executive committee, was elected to the office of President, agreeing to assume the additional duties pertaining thereto without any obligation to continuing the same for an indefinite period.

Mr. Zimmermann will continue as chairman of the executive committee.

Mr. Zimmermann, who is 55 years old, has been prominent in Philadelphia engineering circles since 1899, when he entered the employ of the American Pulley Co. After serving with that company for eight years he became associated with Charles Day in the engineering and construction firm of Day & Zimmermann, Inc., of which he was president for a number of years. Day and Zimmermann, Inc., is a subsidiary of the U. G. I. He was elected a member of the Executive Committee of The United Gas Improvement Co. on Nov. 14, 1928, and on Dec. 4, 1928, he was chosen chairman of that body, thus becoming the chief executive officer of the company during a leave of absence granted Arthur W. Thompson, President. Mr. Thompson subsequently resigned.

Although Mr. Zimmermann actively participated in the construction work of Day & Zimmermann, probably his most valuable contribution to the company's success, and the one for which he is best known in the business world, was his work in the reorganization and management of public utilities. This branch of Day & Zimmermann's activities was under his personal direction until a short time ago, when he resigned the presidency.

Mr. Zimmermann is chairman of the Executive Committee and of the Board of Directors of The Philadelphia Electric Co., and chairman of the Board of Directors of The Philadelphia Electric Power Co., the Susquehanna Power Co., and the Philadelphia Suburban-Counties Gas & Electric Co. He is also a director of the following companies and banking institutions:

Public Service Corporation of New Jersey and subsidiaries, Connecticut Electric Service Co., Day & Zimmermann, Inc., and subsidiaries, United Engineers & Constructors, Inc., and subsidiaries, and other industrial and banking concerns

Mr. Zimmermann graduated from the National College of Buenos Aires (1894) and studied engineering at the University of Buenos Aires and University of Pennsylvania, of which latter he is a trustee, and from which he received the honorary degree of Master of Science in 1928.

Central Public Service Buys Georgia Properties

THE Georgia Power Co., Atlanta, Ga., has sold its gas properties, according to the following announcement of P. S. Arkwright, president of the company:

"The Georgia Power Company has agreed to sell the entire capital stock of the Atlanta Gas Light Co. and of the Macon Gas Co. and the gas plants and distributing systems of the Georgia Power Co. in Athens, Georgia, Brunswick, Georgia, and Decatur, Georgia, to Col. A. E. Peirce and Associates, of the Central Public Service Corp. of Chicago.

"The purchasers are engaged extensively in the manufacture and distribution of gas in a number of places throughout the country, including the following cities in Georgia, namely: Augusta, Rome, Griffin, Waycross, and Valdosta. The purchasers have had long experience in the gas business and are well equipped to give the public excellent gas service.

"In selling the gas properties and business, the Georgia Power Co. will be able to concentrate its efforts and resources to a more intensive development of the electric light and power business in the State of Georgia, and the purchasers, being engaged exclusively in the gas business in this territory, will be able to concentrate their efforts and resources to the development of the gas business. The purchasers are not strangers to the people of this state and have already established themselves in the confidence of the communities in Georgia where they are now rendering gas service.

"The gas properties will be delivered to the purchasers on or about the first part of May, 1929."

S. W. Meals, F. H. Payne, Alexander Forward, W. E. Barton, and Oscar H. Fogg under a banana tree at Carlsbad, California

Invite Suggestions for Munroe Award of A. G. A.

C. A. Munroe

EVERY member of the American Gas Association is invited to submit names to the Association's Executive Board for the Charles A. Munroe Award for outstanding service performed during the year July 1, 1928, to June 30, 1929, according to announcement just made by Association Headquarters in New York.

This invitation to present suitable names is extended to the Association's company and individual members, every officer and director, and all chairmen and members of all general and sectional Association committees.

The award will be made annually without lapse, and it is hoped to make the first presentation at the Association's eleventh annual convention and exhibition at Atlantic City, N. J., October 14-18, 1929.

The Charles A. Munroe Award provides annually for the financial recognition of any individual who, in the opinion of the Association's Executive Board, has made the most outstanding contribution during the year in the general interests of the gas industry.

Mr. Munroe, a former president of the Association and long and prominently identified with the gas industry, has donated $10,000 as the capital sum of the award fund. This has been suitably invested and earnings will be available annually for the award. The treasurer of the Association serves as treasurer of the fund, and a committee of three members of the Executive Board, appointed annually, will constitute the award committee, to report its recommendations to the Executive Board from time to time.

Under the provisions of the award, the most outstanding contribution to the general interests of the gas industry may be presumed to include the following: Research, invention, operating methods or practices which reduce cost of manufacture and distribution, improved distribution or other service, increased sale of gas, development of new uses for gas, improved public and employee relations, promotion of safety, development of improved accounting practices, widening the field of gas making materials, new methods of manufacture, finance, publicity, new gas works products and by-products, rates, etc., etc.

Oscar H. Fogg, president of the Association, commented as follows on the award:

"We are particularly happy to accept the Charles A. Munroe Award, and our Executive Board congratulates the donor on the high purposes which actuate him to establish it.

"Each and every member of the Association has an equal voice in recommending some worthy individual for recognition, and it is hoped that recommendations may now be filed with the committee without delay.

"The award is noteworthy because of its elastic conditions and broad interpretations. Every department of our business comes within its purview. Under such liberal conditions we expect the award to become one of the most sought-after prizes in the gas industry."

King George's Doctors Are Gas Enthusiasts

TWO of the eminent physicians attending King George V of Great Britain during his long and dangerous illness have within the past twelve months changed their home installations of electricity for cooking and heating to complete gas installations.

All nine of the medical men attending the King are using gas and all are good gas consumers. One of them uses a gas fire in his consulting room in London. Among the nine doctors there are 38 gas fires and eight gas ranges in addition to gas water heaters and gas heated sterilizers.

The above statements were made by H. M. Thornton and F. W. Goodenough of the British Commercial Gas Association at a recent conference in London.

AWARDED · IN · RECOGNITION · OF · GREAT · PUBLIC · SERVICE · IN · SAVING · HUMAN · LIFE
· TO ·
· 19 29 ·
AWARDED IN RECOGNITION OF GREAT PUBLIC SERVICE AND HEROISM IN SAVING HUMAN LIFE
· TO ·
· 19 29 ·

The face of the new Midland lifesaving medal, and the two inscriptions which will be used on the back

Life-Saving Medal Is Created by Midland Co.

CREATION of a life-saving medal to be awarded to employees of subsidiary companies has been announced by the Midland Utilities Company.

The design has been accepted and the first awards covering the year 1928 will be made in the near future.

The medal is the work of Anthony de Francisci, well-known New York sculptor, who designed the current U. S. silver dollar, the U. S. War Department Insignias, and several medals which have achieved wide distinction.

The medal, which is known as the Midland Utilities Medal, will be made of silver. It will be awarded in two different designs, one for heroism in connection with the saving of human life, and the other for life saving by resuscitation or in any other manner.

On the face of both medals, in bas relief, appears a powerful, god-like figure bearing in his arms the limp body of another. Man's relentless enemies, the elements in nature, are represented in the background. The year of the founding of the medal—1928—and the inscription—Midland Utilities Medal—appear on the obverse or face of the medal.

The reverse side of the medal, cast in two designs, bears a half-burned taper, symbolic of the course of human life, and an inscription reciting the act for which the medal is awarded. On the one medal are inscribed the following words: "Awarded in Recognition of Great Public Service and Heroism in Saving Human Life." On the other appears the inscription, "Awarded in Recognition of Great Public Service in Saving Human Life." The name of the recipient and the year of awarding, will be engraved, in each instance, in the space below this inscription.

The medal was created by the Midland Utilities Company in recognition of the safety work done in the various subsidiary companies. A large number of the employees of this group of companies have received training in the prone pressure method of resuscitation and in other first aid principles, several having received medals for life saving awarded by the National Electric Light Association and the American Gas Association.

Consolidated Gas Company Honors Old Employee

THE Consolidated Gas Company of New York has named its plant on the land bounded by 20th and 22nd streets and the East River and First avenue the John O'Connell Plant in honor of a man who was, at his death on July 13, 1928, the company's oldest employee both in years and service. The plant had been officially only "the 21st street plant."

John O'Connell was in the service of the gas company for 74 of his 89 years, all spent at the plant just renamed. In his report to stockholders recently, President George B. Cortelyou said of O'Connell:

"His record of unbroken service in one plant or station is unique in the history of the gas industry of this nation, and probably of the world, while his devotion and loyalty during the whole of that period were invaluable."

Sidney Z. Mitchell has been elected chairman and C. E. Groesbeck president of the new Electric Bond and Share Company, while the other officers of the old company were elected to corresponding positions in the new. The directors of the new company include Messrs. Mitchell and Groesbeck and Frederick A. Farrar, E. K. Hall, George H. Howard, Edwin G. Merrill, L. E. Pierson, William C. Potter and Frederick Strauss. Messrs. Mitchell, Groesbeck, Pierson, Potter and Strauss were appointed members of the executive committee.

The consolidation of the old Electric Bond and Share Co., and the Electric Bond and Share Securities Corp., is now effective, and the two old companies have ceased to exist as corporate entities.

The Monthly Tabloid—Personal and Otherwise

P. H. Gadsden

On January 22, 1929, Philip H. Gadsden, vice-president of The United Gas Improvement Co., Philadelphia, Pa., was elected President of the Philadelphia Chamber of Commerce. He had served three successive terms as head of that organization, but at the annual meeting of the Chamber the constitutional restriction in its by-laws prohibiting a President from serving more than three successive terms was removed, thus enabling the directors to continue Mr. Gadsden in charge of the body's activities.

Immediately after his reelection, Mr. Gadsden issued a statement urging federation of all the civic bodies in Philadelphia to effect greater efficiency in the civic and business life of the city. His proposal has for its object the development and betterment of Philadelphia in commercial, industrial, social, and cultural activities.

H. C. Blackwell

H. C. Blackwell, Presi- of the Union Gas and Electric Co., Cincinnati, Ohio, has recently been reelected President of the Cincinnati Chamber of Commerce.

Mr. Blackwell is also President of the Cincinnati Electric Club, and chairman of the Cincinnati Safety Committee of the Industrial Commission of Ohio.

J. A. Pearson, vice-president in charge of purchasing, The United Gas Improvement Company, has tendered his resignation effective April 1. Mr. Pearson has been in U. G. I. employ for forty years.

In making the announcement, John E. Zimmermann, president of the company, said:

"I regret to announce the resignation of Mr. Pearson, vice-president in charge of purchasing, effective April 1. Mr. Pearson's retirement is at his own suggestion and is in pursuance of a determination of several years to retire from business upon the completion of forty years of service with the company.

"Under Mr. Pearson's administration, the Purchasing Department of the U. G. I. has been brought to a very high standard."

H. C. Palmer

Harry C. Palmer, former vice-president and since last May acting president of the Iroquois Gas Corporation, was elected president of that organization at a directors' meeting held recently.

At the same time Leigh A. Brown and Cornelius E. Moynihan were elected respectively vice-president and secretary-treasurer of the company, positions which they have been filling in fact for some time. No new directors were elected.

W. J. Hinchey

W. J. Hinchey has resigned as general superintendent of The Gas Service Co., Kansas City, Mo., to become one of the officials of the Missouri-Kansas Pipe Line Co. which has its headquarters in Kansas City. Mr. Hinchey is well known throughout the gas fraternity in all sections of the United States, having worked in all branches of the industry.

With the Missouri-Kansas Pipe Line Co. Mr. Hinchey will be vice-president in charge of new properties. This company is rapidly developing its holdings in Missouri, Kansas, Oklahoma, and Kentucky.

Mr. Hinchey has been in the gas business for more than 28 years, beginning with the United Natural Gas Co. at Bradford, Pa. In 1908 he joined the ranks of the Kansas Natural Gas Co., Kansas City, Mo. In 1923 he was made general superintendent of the Union Public Service Co. which was later purchased by the Henry L. Doherty Co., and operated with others under the management of The Gas Service Co.

The value of Mr. Hinchey's knowledge and ability was soon recognized by the officials of The Gas Service Co. whereupon he was made general superintendent of that company, his supervision covering distributing systems in more than 60 communities including Kansas City, Mo. Mr. Hinchey took up his new duties with the Missouri-Kansas Pipe Line Co. on March 1.

Charles Koinm, who has been connected with Doherty companies for some time, has been appointed to succeed Mr. Hinchey as operating superintendent of the Gas Service Co.

William J. Serrill, H. S. Battin, and C. S. Chrisman, all of The United Gas Improvement Co., Philadelphia, Pa., were retired from active duty on March 1, after a total service in the company's employ of 113 years. Mr. Serrill, Mr. Chrisman, and Mr. Battin are all prominent in the gas industry, and have a host of friends all over the country.

Mr. Serrill entered the employ of The United Gas Improvement Company in June, 1885, in charge of the Construction Department and of the drafting room. He held many responsible positions with the company and its subsidiaries and, in 1926, he was appointed chairman of the Research Committee, in which he remained until his retirement.

Mr. Serrill was the third oldest U. G. I. employee in point of service. Throughout his long career he has been active in association work, and has held numerous important posts. He is president of the American Engineering Standards Association.

Mr. Chrisman has had 38 years of service with The U. G. I. Company and system companies. His first connection was as draftsman in 1891.

In 1923, he was appointed assistant engineer of tests, and has remained in that department since that time. He has contributed many inventions and improvements to U. G. I. gas-making equipment.

Mr. Battin became a U. G. I. and system company employee in 1898, as superintendent of the Frankford District, Philadelphia Gas Works. In 1900, he was appointed superintendent of meters and special mains in Philadelphia, which position he held until 1903, when he was transferred to Broad and Arch Streets as assistant to general superintendent, The U. G. I. Co. He remained in that position until he was appointed executive assistant in the Operation and Maintenance Department.

All of Mr. Battin's business life has been spent in the utility field. In 1878, he started in the office of the Scranton (Pa.) Gas and Water Company. His next position was as superintendent of the Honesdale (Pa.) Gas Company, and in 1883 he went to Chicago, Ill., as superintendent of works of the Chicago Gas Company. Just prior to coming to Philadelphia in 1898, he had been promoted to engineer of the Chicago company.

H. Vittinghoff, who for the past 12 years has been in general charge of the operations of the gas companies under the executive management of Stone & Webster, Inc., is entering a broader field of activity in joining the organization of the Stone & Webster Engineering Corp., with the general functions of a consulting engineer. While this will involve work in all sorts of industrial projects, Mr. Vittinghoff plans to continue to be closely associated with the gas companies under Stone & Webster executive management, as well as the gas industry in general.

K. F. Dickinson, manager of the Northern Indiana Power Co., Huntington, Ind., has been transferred to Lafayette, Ind., as general manager of the company's properties in that district. His place at Huntington will be taken by Paul McLeod, of Lafayette, who has been superintendent of the power plant in that city.

William Herald, who graduated from Purdue University last June, has been appointed heating engineer with The Minnesota Northern Power Co., and will be located at the new natural gas property in the Black Hills region of South Dakota, his headquarters being at Rapid City. Mr. Herald has been carrying on research work at the Engineering Experiment Station of Purdue since graduation, and he has been closely associated with the tests of gas conversion units.

E. H. Kifer, vice-president and general manager of the San Antonio Public Service Co., San Antonio, Texas, has been elected President of the San Antonio Chamber of Commerce. For the past ten years Mr. Kifer has taken a leading part in that city's commercial and civic life.

Fred F. Doyle, formerly general field superintendent of the Midway Gas Co., and more recently supervising engineer of the Southern California Gas Co., Los Angeles, Calif., is now on the engineering staff of the Pacific Gas and Electric Co., San Francisco. He will handle the engineering work in connection with the new natural gas line which the Pacific Gas and Electric Co. is constructing.

In 1912 Mr. Doyle was with the Kansas Natural Gas Co., joining the Midway company in 1916, and automatically becoming affiliated with the Southern California Gas Co. when it was consolidated with the Midway.

Rolland M. Heskett, executive manager of several utility companies, has been elected to the board of directors of the Northwestern National Bank at Minneapolis. Mr. Heskett formerly was connected with the Minnesota Utilities Co. in the Superior iron range district. He removed to Minneapolis in 1923, and is now vice-president, treasurer, and managing executive of the Minnesota Northern Power Co., the Montana-Dakota Power Co., the Black Hills Utilities Co., and the Gas Development Co.

Affiliated Association Activities

The Ohio Gas and Oil Men's Association

L. K. Langdon

ABOUT 600 persons registered at the highly successful convention of this Association held in Columbus, Ohio, March 6 and 7. The program started in the afternoon of the first day and ended at noon on the second day. This arrangement proved most satisfactory as it permitted those living at short distances to travel in the morning of the first day and on the afternoon of the second day. The plan of breaking up the gathering into smaller groups for discussion of specialized subjects likewise proved satisfactory. The papers and addresses were splendid and the banquet was thoroughly enjoyable.

The following officers were elected: President, Laurence K. Langdon, Union Gas & Electric Co., Cincinnati; vice-presidents, Raymond Cross, Ohio Fuel Gas Co., Columbus, and Warren E. Burns, Marietta; secretary-treasurer, Wm. H. Thompson, Columbus; directors: John J. McMahon, Ira L. Neely, P. W. Lupher, James Burner, Emmett R. Curtin, T. C. Jones, John J. Kleise, and L. A. Seyffert.

Southern Gas Association

THE program for the convention of the Southern Gas Association, to be held in Memphis, Tenn., April 23, 24, 25, promises most interesting sessions. A novel and attractive feature of the convention will be the holding of the third day's sessions on board a Mississippi River steamboat. Following the business meeting on that day music will be provided for dancing.

The sessions on April 23 and 24, as well as the dinner dance in the evening of April 24, will be held at the Hotel Peabody. A feature of the general session on the first day will be an address by Col. Oscar H. Fogg, President of the American Gas Association.

George H. Schlatter, chairman of the commercial section, and D. H. Levan, chairman of the production and distribution section, have prepared the programs for the meetings of their sections in the afternoons of April 23 and 24. The papers and discussions promised for these sessions assure most interesting meetings.

The Memphis Power & Light Co., host to the convention, has designated committees from its organization to extend every attention possible to those attending the convention. Paul Renshaw, of Memphis, is the chairman of the entertainment committee.

The entertainment features, in addition to the sail up the Mississippi River, include a theater party on the evening of the first day and the dinner dance with carbaret features on the evening of the second day. Other entertainment features will be luncheons for the ladies on the first two days, one at the Hotel Peabody and the other at the Nineteenth Century Club, which is the city's largest club owning its own home.

New England Gas Association

J. J. Quinn

THE following officers were elected at the annual convention of the New England Gas Association held in Boston, February 6 and 7:

President, J. J. Quinn, Citizens Gas Light Co., Quincy, Mass.; first vice-president, H. Vittinghoff, Stone and Webster, Inc., Boston, Mass.; second vice-president, M. B. Webber, Athol Gas & Electric Co., Athol, Mass.; directors at large, Merle Abbott, Glenwood Range Co., Taunton, Mass., and E. E. Eysenbach, Hartford City Gas Light Co., Hartford, Conn.; treasurer, F. D. Cadwallader, Boston Consolidated Gas Co., Boston, Mass.

Pennsylvania Gas Association

THE annual meeting of the Pennsylvania Gas Association will be held at the Benjamin Franklin Hotel, Philadelphia, on April 10-11.

The morning of April 10 will be devoted to registration and Association business. In the afternoon there will be papers presented on "Central Coke Oven Plants," by W. H. Earle, manager, Philadelphia Coke Co., Philadelphia; "Distribution," by Paul Fusselman of the Philadelphia Suburban Counties Gas & Electric Co., Ardmore; "Customers' Service," by Wm. Tobias, Central Public Service Co., Hagerstown, Md.

F. L. Mendez, of Jenkintown, will address the Thursday morning session on "Greater and Better Water Heater Sales;" Roscoe Edlund, managing director of Cleanliness Institute, will talk on "Cleanliness," and Dr. Theodore Grayson, director, Evening School of Accounts and Finance, University of Pennsylvania, will speak on "Investment Trusts."

In the afternoon of the 11th, Jay H. Truman, coml. mgr., Allied Power and Light Corp., will

deliver a paper on "The Gas Company; a Selling Organization;" and Chas. L. Hoffman, asst. secy., Consumers Gas Co., Reading, will talk on "Meter Reading." "Collection" will be treated by John T. Good, Consumers Gas Co., Reading, and H. D. Van Amburgh will give an inspirational talk.

Indiana Gas Association

ATTENTION is called to the announcement in the March Monthly concerning the annual convention of the Indiana Gas Association to be held jointly with the Indiana Public Utilities Association and the Indiana Electric Light Association at the Hotel Gary, Gary, Ind., May 1, 2, and 3.

The Indiana Gas Association will be in charge of the program of May 1. The second day, May 2, will be given over to general utility activities and subjects under the auspices of the Indiana Public Utilities Association. The program for May 3 will be in charge of the Indiana Electric Light Association. Speakers of national prominence will address the various sessions of the convention.

In addition to the regular program committees of the three Associations, a special committee of Gary business men is arranging entertainment and sight-seeing tours for those attending the convention. Features of interest to women attending the convention also are being arranged.

New Jersey Gas Association

THE 1929 annual meeting of the New Jersey Gas Association, scheduled for April 24 and 25 at the Stacy-Trent Hotel, Trenton, N. J., is expected again to set new high standards both as to attendance and subject matter covered in addresses.

Alexander Forward, managing director of the American Gas Association, will address the Wednesday morning session on April 24 on the subject of "Research and the Gas Business."

The Wednesday afternoon session will be devoted to papers and discussions on the following subjects: "Social Trends and Economic Conditions and Their Effect on the Rates to be Charged for Gas," H. H. Agee, rate engineer, The Public Service Electric & Gas Co.; "More Equable Gas Schedules and Their Relation to Gas Sales," J. P. Leinroth, general industrial fuel representative, The Public Service Electric & Gas Co.; "Rise and Decline of Prepayment Meters—An Obituary," Col. Philander Betts, Public Utility Commission; "New Method of Utilizing Soft Coal as a Generator Fuel," J. N. Paff, Glassboro Gas Co.

The Thursday morning session will be addressed by Harlow Clark, director of publicity, The Public Service Electric & Gas Co., on the subject of "Gas and Publicity—Observations of a Publicity Man on Sales, Service, and Public Relations." L. N. Yetter, commercial manager, Atlantic City Gas Co., will deliver a paper on "Modern Domestic Gas Sales Promotion." L. E. Dequine, Jersey Central Power & Light Co., will speak on "Experiences with the Operation and Construction of High Pressure Systems," and F. F. Schauer, general manager, Equitable Gas Co., will talk on "Customer Contacts."

The Thursday afternoon session will be devoted to papers and discussions. Among these are: "A Pound of Fuel in the Harrison Gas Works," R. H. Phillips, Jr., engineer, The Public Service Electric & Gas Co.; "Present and Future Prospects of Sales of Gas Refrigeration," F. E. Sellman, Servel Sales, Inc.; "Gas House Heating in the Jersey Central District," H. M. Woolman, Jr., Jersey Central Power & Light Co.

Wisconsin Utilities Association

THE annual convention of the Gas Section of the Wisconsin Utilities Association, to be held at the Hotel Athearn, Oshkosh, Wis., April 18 and 19, is expected to attract a large attendance.

At the Thursday morning session, April 18, there will be a report on "Aeration of Industrial Gas Burners," by Prof. O. L. Kowalke and N. H. Ceaglske, University of Wisconsin, Madison. This will be followed by the Report of Committee on Dehydration by H. R. Broker, chairman, Wisconsin Gas & Electric Company, Racine.

"Safety as Applied to the Gas End of the Utility Business" is the title of a paper by C. B. Boulet, Wisconsin Public Service Corp., Milwaukee.

The Thursday afternoon session will be devoted to papers and reports of representatives of the Wisconsin Utilities Association on Managing Committees of the American Gas Association. "Recent Improvements in the Racine Gas Plant" is the title of S. B. Sherman's contribution. Mr. Sherman is connected with the Wisconsin Gas & Electric Co. This will be followed by "How the Operating Man Can Assist the Accountant to Keep Proper Records," by Louis T. Smith, Milwaukee Gas Light Co.; "Better Team Work Between Technical and Commercial Departments," by E. R. Felber, Madison Gas & Electric Co.; followed by reports by S. B. Sherman, representative on the A. G. A. Technical Section Managing Committee; A. A. Schuetz, on the Industrial Section Managing Committee; W. R. Lacey, representative on the Manufacturers Section Managing Committee.

At 4:00 P. M. Thursday, April 18, there will

be an inspection trip through the offices and plant of the Wisconsin Public Service Corp.

The annual Gas Section dinner will be at 6:30 P. M. Thursday in the dining room of the Hotel Athearn. Dress will be informal. Speakers will be Alexander Forward and Attorney E. J. Dempsey, of Oshkosh.

On Friday morning, April 19, the Gas Distribution Symposium will be led by W. E. Kemen, Milwaukee Gas Light Co., chairman, Distribution Committee. High-Pressure Distribution, by H. E. Sweet, Wisconsin Power and Light Co., Madison; Typical Low-Pressure Service Construction, by G. A. Corine, Superior Water, Light & Power Co.; and other presentations will be given in behalf of the committee. Fred M. Millington, Wisconsin Public Service Corp., Green Bay, will present a paper, "Estimating House Heating Installations;" and Henry J. Dropp, Milwaukee Gas Light Co., will discuss "Commercial Uses for Gas."

Mid-West Gas Association

THE twenty-fourth annual convention of the Mid-West Gas Association will be held at the Hotel Nicollet, Minneapolis, Minn., April 15, 16 and 17. Some of the features of the program were mentioned in the March Monthly. President Stein's interest in the arrangements of splendid business and entertainment programs assures the continued reputation enjoyed by this Association for holding most interesting and constructive meetings.

Empire State Gas & Electric Association

THE annual meeting of the Gas Section of the Empire State Gas and Electric Association will be held at the Hotel Niagara, Niagara Falls, N. Y., on April 25 and 26, 1929. There will be morning and afternoon sessions with a banquet in the evening of the 25th, and a morning session on the 26th.

The managing committee has arranged a splendid program which includes the following main subjects: Consumers' meters, large industrial meters, gas distribution, shop practice, carbonization, and water gas. A committee will render a report on each of these subjects, and following there will be presented papers covering distinctive phases of the general subject. W. J. Welsh, vice-president of the Association, will address the meeting on the morning of the 25th. "Gas Engineering Problems of the Future" will be the subject of an address at the banquet. There will be an election of officers.

At a recent meeting of the Managing Committee of the Accounting Section of the Empire State Association it was voted to hold the 1929 annual meeting of the Section at the Hotel Van Curler, Schenectady, Thursday and Friday, May 9 and 10.

Illinois Gas Association

E. E. Lungren

E. E. LUNGREN was elected to head the Illinois Gas Association at its annual convention held in Springfield, March 14 and 15. Other officers elected were H. T. East, vice-president, George W. Schwaner, secretary, J. A. Strawn, B. J. Mullaney, E. D. Alexander, and M. L. Harry, directors.

Monsieur Gastout

(Continued from page 206)

posters are protected under glass and illuminated from behind.

"The gas society is experimenting with something new this season, and while Gastout has not yet been photographed in his new phase, I'll try to describe it. A large tricycle has been manufactured with a small reproduction of a gas holder on the back—in the position in which we usually see a delivery box on a butcher's three-wheeler. On the gas holder is a painted advertisement and this may be varied, or the gas holder may be replaced by Gastout removing his hat in salutation. The tricycle is pedalled around the streets and naturally attracts much attention.

"Less spectacular are various folders and booklets which the Societe issues. Some are quite serious, on industrial subjects, but others have an amusing vein . . . M., et Madam Gastout employing gas service throughout the day, for cooking, heating, washing, ironing and, finally tubbing Gastout, Junior, in a pint and a half of hot water."

Waste Disposal

(Continued from page 204)

SANITARY WATER BOARD
OF THE
COMMONWEALTH OF PENNSYLVANIA.

By Theodore B. Appel, M.D., Chairman.
Attest: W. L. Stevenson, Secretary.

This agreement was ratified by the Council of the Pennsylvania Gas Association on

December 10th, and was unanimously accepted by the Association at the regular meeting on December 11, 1928.

The committee in connection with this report gave a detailed sketch of standard separator design, a report on the method of operation of the iron sulphate treatment, and also a report on the operation and design of a standard dehydration plant. These reports to be kept in the files of the Pennsylvania Gas Association for the information of any company desiring the same.

Company Issues Statement of Appliance Sales Policies

THE following is the statement of appliance sales policies of the Pacific Gas and Electric Co., San Francisco, Calif.:

"We believe that the public must be served.

"That best public service can only come from a united industry, composed of the utility, appliance manufacturers, jobbers and dealer trade.

"That an organized effort by the entire industry is essential if the maximum amount of business is to accrue to each group through creation of consumer acceptance of our products.

"That such a united industry can and will successfully compete with other organized industries to the end that a fair share of the public buying power will be obtained.

"That it is the duty of the utility particularly to do pioneering selling in that appliance field where there is no public demand or due to special conditions no adequate retail profit for creative and aggressive selling by retailers.

"That the utility, in addition to supplying quality service at fair rates, assume leadership in the sale of quality appliances at established retail prices, adhering to ethical, constructive merchandising methods on a basis that will encourage the activity of all legitimate retailers.

"That such ethical leadership has stimulated and will continue to stimulate public buying of appliances, installation work, and general supplies.

"That it is the desire of the Pacific Gas and Electric Company to continue encouraging as many legitimate retail appliance dealers as can economically operate; to cooperate with such natural outlets by financing and executing constructive educational selling and advertising campaigns.

"That merchants and dealers can and should retail appliances at prices fair to themselves and the public by such methods as have been found to be sound by successful retailers.

"That the manufacturers and jobbers can best contribute to this plan by supplying well advertised merchandise of unquestionable quality at prices which permit the seller a legitimate profit margin.

"The Pacific Gas and Electric Company will continue:

"To keep an open mind. To be guided by facts. To hold out to all groups the right to full discussion. To hold to those policies we believe to be right but to quickly concede where we find we are wrong."

Important Coast Companies are Merged

NEGOTIATIONS which have been under way for control of Southern California Gas Corp. and all of its operating subsidiaries by Pacific Lighting Corp. have been consummated, according to an announcement of officials of the company through their bankers.

All details in connection with the deal have been concluded, and it lacks only official approval of the Corporation Commissioner of California in order to complete all legal arrangements. A press dispatch says:

The transaction will involve no new financing, as the entire deal is to be handled on an exchange of stock basis. Upon completion, Pacific Lighting will have outstanding 1,463,000 shares of its common stock out of a total authorized issue of 10,000,000 shares. Combined assets have an aggregate value of $192,011,329. Gross earnings of the two companies totaled $46,448,728 for the year ended December 31 last. Net earnings of combined properties for the same period aggregated $5,897,240.

THE POETRY OF RESEARCH

I SALUTE the workers in physical research as the poets of today. It may be that they do not write in verse, but their communications are of such lively interest that they are on the front pages of our newspapers and command space in our cultural periodicals. They contribute the warming glow of inspiration to industry, and when industry pulls their ideas down from the heavens to the earth and harnesses them for practical service, it too feels that it is an important actor, not only in the making of things, but on the larger stage of the human spirit. There may be enough poetry in the whir of our machines so that our machine age will become immortal.

—Owen D. Young.

Natural Gas Department
S. W. MEALS, Chairman H. C. MORRIS, Vice-Chairman
E. J. STEPHANY, Secretary

Selling Gas to the Steel Industry

By C. M. GROW

ABOUT seven years ago the gas companies of California began to investigate the fuel requirements of the steel treating industry. As a result of the survey we began to realize the vast importance of the essential use of fuels in the fabrication and heat treatment of metals. We also learned that the metals industry was even then well-established on the Pacific Coast, and that the steel treating plants were being operated by highly technical and skilled engineers.

To be of real service to these men, it was necessary for us to qualify in the intricacies of their many problems.

Steel treaters have a right to expect a furnace to fit into their line of production as does a well-made turret lathe and operate with comparable precision. To give this result, the furnace manufacturer is confronted with many problems. The main one is getting the engineers of the factory and the furnace manufacturer together. It is not a case where the steel plant manager should say to the furnace manufacturer, "Here's your furnace contract; now make good." On the other hand, it should and will be a case whereby the steel treater's intimate knowledge of his production schedule and types of steels are combined with the furnace manufacturer's ability, in combustion, furnace design, and general knowledge of the mechanical requirements of the modern furnace. The better way is: Here's *our furnace contract;* let's make good.

Through contact with members of the American Gas Association we learned that

Mr. Grow is new business manager of the Southern California Gas Co., Los Angeles, Calif.

Heat treating furnace at Western Metals Congress exhibit

considerable progress had been made by Eastern engineers in solving many of these problems.

Fundamentally, the principle consists in burning a homogeneous mixture of air and gas in the quantitative proportions for complete combustion of the gas, in a restricted and localized zone so designed that a condition of incandescence is maintained. These conditions cause tremendous acceleration of the rate of combustion and produce a source of heat, which is practically without flame, yet comes very close to using the total available energy of the gas.

With this matter of combustion solved we are now able to base the design of a furnace solely on the sort of work that it will be required to perform.

By the use of inspirators and a single control on the gas and air we not only obtain a correct proportion of each but there is a great increase in heat transmission at the higher temperatures. In this manner we secure a uniform distribution of the heat throughout the heating zone.

Engineers of the Pacific Gas and Electric Co. were applying this principle with a considerable degree of success.

My own company sent two graduate engineers to San Francisco for a period of time to study the details of installation, and to check the accuracy and precision in the results obtained in the practical operation of furnaces designed to burn gas.

Designing Furnaces

For several years we relied wholly upon designs supplied to us by the Eastern engineering concerns. Later we secured the services of experienced engineers, men of several years' experience, and for over three years we have been designing and building furnaces for our customers and the customers of other gas companies.

These furnaces are designed and built in our own shops, and most of them tested out under actual working conditions before reaching the final destination.

The furnaces cover a considerable range of metal working processes, such as forging, melting of non-ferrous metals, heat treatment of steel and its alloys, heat treatment of aluminum and its alloys, carburizing, rivet heating, galvanizing and other special processes.

As a result of our accumulated experience and with the indispensable assistance of the various plant engineers, we have been able to depart from standard types of furnaces and are able to apply the principles of modern furnace design to unusual requirements.

We believe that the gas lends itself more readily to positive temperature and atmospheric control than any other known fuel. We have been striving for refinements in the application which tend to produce precision in results, freedom from oxidation and increased production.

Economy and improved operating conditions were assured from the start.

The Ceramic Field

Coincident with our activities in designing and building heat-treating furnaces, our engineers have devoted much time and study to ceramics and have been able to assist the manufacturers of fire brick and other refractory and insulating material to improve their product.

In fact, one of the most important features of furnace design involves the proper selection of insulating material.

All of the gas companies in the West are up on their toes in the matter of gas service to the metals industry. The outstanding companies in the field of application of gas to the steel industry are the Pacific Gas and Electric Co. and the Southern California Gas Co., together with certain furnace manufacturers. Each of the gas companies maintains a force of ten or more engineers who devote their time exclusively to the design and installation of metal-working furnaces, and this without a thought of profit other than that derived from the sale of our product.

The best evidence of our success in securing the general use of gas-fired furnaces is perhaps indicated by the photo shown herein, which was taken of our display at the Western Metals Congress, recently held in Los Angeles.

Code of Ethics for Oil Men Is Discussed

LEADERS in the petroleum industry met at St. Louis recently to discuss adoption of a "code of ethics" through which it is sought to eliminate methods of competition considered unfair or "otherwise bad."

The code, formulated by the American Petroleum institute, was made the subject of a public hearing and discussion presided over by Edgar McCulloch, member of the Federal Trade Commission.

M. Markham Flannery, director of trade practices of the commission, explained that the oil industry had appealed to the commission in December for assistance in eliminating the practices frowned upon by the code.

"It is purely a voluntary movement on the part of the oil men," he said, "to eliminate by common agreement practices which are largely outside the pale of the law."

The code condemns furnishing of free equipment such as gasoline pumps to retailers, declaring that it is a "practice which has resulted in a multiplication of filling stations to the detriment of the industry." It also condemns refusal of some dealers to post their prices; inducements offered to get dealers to break existing contracts; substitution of products other than those advertised, and bonuses and premiums given on special sale days and opening days to attract customers.

John Tonkin Has Birthday

CAPT. JOHN TONKIN, of Oil City, Pa., probably the oldest natural gas man living, celebrated his ninety-second birthday on March 21st. Until recently, he was President of the Central Kentucky Natural Gas Co. Since retiring from this company, he has been and is at present devoting his energies to his other natural gas and oil interests.

Capt. Tonkin went into the oil and gas business at the close of the Civil War as superintendent of the Dennis Run and New York Oil Co., then at Tidioute, Pa. In 1887 he took charge of field operations for the Northwestern Ohio Gas Co., in a short time being made general manager for that company with headquarters in Toledo, Ohio. In 1894 he was called to Oil City, Pa., to become assistant general manager of all the natural gas interests of the Standard Oil Company. In 1906 he was elected President and general manager of the Oil City & Fuel Supply Co., Mountain State Gas Company of West Virginia, and River Gas Co. of Ohio. He was also chosen vice-president of the United Natural Gas Co. of Oil City and vice-president and general manager of the Clarksburg Light & Heat Co. of West Virginia. Upon the dissolution of the Standard Oil Co. in 1911, Capt. Tonkin retired from all companies except the Clarksburg organization with which he remained until 1915. Meanwhile he acquired his own gas interests in the Kentucky fields and in 1906 had joined with Messrs. Seep, Hampton and others in the formation of the Central Kentucky Natural Gas Co., of which he was President until this company was acquired by the Columbia Corporation in 1928.

Where Are Joseph Beasley, Jr., And Oliver Trim?

IN the 1927-1928 Wrinkle awards of the Natural Gas Department, Joseph Beasley, Jr., Box 355, Barnsdall, Okla., and Oliver B. Trim, care Lone Star Gas Co., Quinto, Louisiana, were winners.

The prize winning checks were mailed to these men at the addresses given and have been returned with notices from the postal authorities that they could not be found.

If these two prize winners will kindly communicate with the Natural Gas Department of the A. G. A., their checks will be forwarded to them.

A. G. A. Research Exhibited at Rutgers University

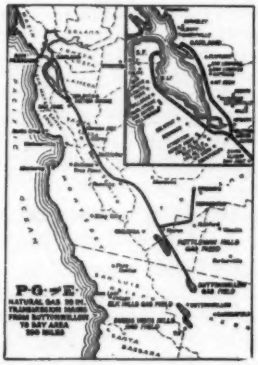
THE research being conducted for the A. G. A. Committee on Industrial Gas Research at Rutgers University was demonstrated in detail during the Ceramic Exhibition held March 8 and 9 in the Department of Ceramics building. The gas research laboratory during the exhibition was in charge of A. P. Watts, A. G. A. research investigator.

Mr. Watts demonstrated the manner in which a complete study is being made of the effect of various furnace atmospheres on glazed tile. He explained in detail the steps that are being taken to segregate the effects of different gases and how it is proposed to work out the principles for utilizing gas heat in direct furnaces for firing tile and similar products.

Samples of tile fired with gas under different conditions in the experimental furnaces were exhibited, together with the scientific instruments used for accurate measurement and control.

Seventy-six New Jersey ceramic manufacturers had their wares on display. The attendance register showed that there were several thousand persons at the exhibition. These visitors were from nine states and more than 100 cities. It is planned to make the exposition an annual affair at Rutgers University which is located at New Brunswick, N. J., in the center of the country's largest ceramic manufacturing district.

Natural Gas in San Francisco by August 1



NATURAL gas will be in the San Francisco Bay area by August 1st," A. F. Hockenbeamer, president of the Pacific Gas and Electric Co., declared recently. The first section of a giant pipe line which will bring gas from the San Joaquin Valley oil fields to San Francisco, San Jose, Oakland, and adjacent territory, is now being laid. More than thirteen million dollars will be invested in the enterprise.

The main pipe line will be 250 miles long. Pipe for the first 60 miles has already been manufactured, and is now en route to California. A wire from the company reads:

"One hundred and thirty-two cars of pipe, making two solid train loads of 66 cars each, left Monday morning with double-header engines, carrying the banner, 'California, here we come.' "

Work on the first section of the pipe line will begin at Tres Pinos. Ditching crews will work east through the Panoche Pass into Fresno County at the rate of two miles a day.

Plans for the pipe line call for a 16-inch main from the Buttonwillow gas field near Taft in Kern County to Kettleman Hills, California's latest and perhaps largest gas field. From Kettleman the line will be 22 inches in diameter to Mendota in Fresno County. There, it will reduce to 20 inches and will turn west through Panoche Pass to Tres Pinos and then run by way of Hollister, Gilroy, and San Jose to Milpitas.

At Milpitas a metering station will be established from which two branches will take off, one to San Francisco and the other to Oakland, Alameda, Berkeley, and Richmond.

The entire line will be welded throughout and will form practically a continuous tube without joints from the oil fields to the Bay area.

Fresno will be supplied through an 8-inch branch which will leave the main line at Huron and run 40 miles across the floor of the San Joaquin Valley. Including this branch and the branch from Milpitas to Oakland, the total amount of pipe to be laid will be 282 miles and will fill more than 1800 cars or 30 trains of 60 cars each.

A new gas holder of 10,000,000 cu.ft. capacity will be erected in San Francisco and one of 8,000,000 cu.ft. in Oakland, increasing storage facilities in the two cities to more than 60,000,000 cu.ft.

Gas will be delivered to the pipe line in the Buttonwillow and Kettleman fields at a pressure of 400 lbs. This pressure will be reduced en route so that the gas will arrive in San Francisco and Oakland at a pressure of 50 lbs. Long term contracts already made assure an ample supply of gas for a term of years. It is expected that use will increase rapidly. As soon as the demand warrants a large compressor plant will be erected near the Kettleman Hills to add to the supply. Later a booster station will be constructed between Kettleman Hills and San Jose, which will give the line an ultimate capacity of at least 125,000,000 cu.ft. per day.

Household customers will be served a mixed gas, and large industries located close to the pipe lines which will pass through the principal industrial areas will be supplied with straight natural gas.

OUR NEW MEMBERS

Manufacturer Companies

Beach Foundry Ltd., A. L. Acton, Secy., Ottawa, Canada.

Great Western Stove Co., J. A. Underwood, V.-P. & Gen'l Mgr., Second & Choctaw Sts., Leavenworth, Kans.

The Independent Stove Co., A. J. Tinkler, Director of Marketing, Owosso, Mich.

Plibrico Jointless Firebrick Co., Frank S. Rieder, Adv. Mgr., 1800 Kingsbury St., Chicago, Ill.

F. I. Raymond Company, F. I. Raymond, Owner, 228 N. La Salle St., Chicago, Ill.

Witt-Humphrey Steel Co., Raymond S. Osborne, Gas Engr., Greensburg, Pa.

Active Members

Nee, P. J., Interstate Power Co., Dubuque, Iowa.

Hubbell, Russell H., Hill, Hubbell & Co., 160 Fremont St., San Francisco, Calif.

Callahan, Errett L., Central Public Service Corp., 105 W. Adams St., Chicago, Ill.

McGrue, Wm. M., Atlas Luminite Cement Co., Ambassador Bldg., St. Louis, Mo.

Smith, Bert, Southern Cities Dist. Co., Shreveport, La.

Green, Wm. A., Industrial Gas Co., El Dorado, Ark.

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Accounting Section
F. H. PATTERSON, Chairman H. W. HARTMAN, Secretary J. L. CONOVER, Vice-Chairman

Utility Financing on the Pacific Coast

(Continued from page 222)

the Pacific Coast, which illustrate the fact that there never has been a steady fixed cost for money.

The first one of any size that I know of is a six per cent issue of the Spring Valley Water Co. made in 1866 or 1867, which matured in 1886 or 1887. A few years previous to the maturity, the company authorized an issue of four per cent bonds large enough to take up the six per cent bonds when they matured and to provide other money needed at that time. In the spring of 1887, a large portion of these four per cent bonds having been underwritten by a syndicate at nearly par, the bonds were offered to the public and sold freely at a premium of 1½ per cent and two per cent.

During the panic of 1893 these bonds declined 10 or 12 points and then gradually appreciated until in 1900 they again sold above par. I cannot find the data concerning the issue of the four per cent bonds dated December 1, 1903. My impression is that the larger part of them was underwritten just before the fire of 1906, the proceeds to be used to redeem the four per cent bonds due about December, 1906. I was the executor of the estate of a member of the underwriting syndicate and his books showed that this underwriter paid 94½ for the bonds after the fire. I know the bonds were not delivered to the underwriters until about January 1, 1907. In the 20 years previous to that time the property of the company had been greatly enlarged by capital additions and had greatly increased in value and the security was better then than it was in 1887, but due to different money conditions in 1906 and 1907 and perhaps as one of the results of the fire, the company had to pay a higher rate of interest than it did 20 years earlier and if the underwriting syndicate had been formed a few months later it would have had to pay a still higher rate of interest. The bonds during the fall of 1907 sold as low as $80. About 1887 the L. A. Gas Co., through its President, Charles H. Simpkins, sold an issue of $15,000 of six per cent bonds to Balfour, Guthrie & Co., who placed part of the issue in England. It was a first closed mortgage of a company supplying about 2000 customers and earning its interest charges about five times.

The directors believed the surplus earnings of the company, about $36,000 per year, would easily provide for future capital expenditures and a proper dividend upon the capital stock. It is interesting to note that for many years the capital expenditures made to supply gas to residents in and near Los Angeles have averaged over $3,000,000 per year—20 times this entire issue.

The San Francisco Gas Light Co. never had a bonded debt. When the company was formed in 1875 by the consolidation of the San Francisco Gas Co. and the Metropolitan Gas Co., 100,000 shares of stock were issued and all betterments were made from earnings or call loans up to 1903. Meantime the company had absorbed the electric business in San Francisco and changed its name to S. F. Gas & Electric Co., and incidentally had assumed $623,000 of bonds of the electric company. In 1903, when the San Francisco Gas & Electric Co. absorbed the Pacific Gas Improvement Co. and the Spreckels companies, it issued $8,000,000 of 4½ per cent bonds. I cannot recollect the exact amount that Claus Spreckels received for his companies, but I think it was about $5,000,000, and I recollect very well that he stipulated that the bonds which he took for his properties should not be callable. The other bonds were called by lot at the rate of $100,000 a year at $105 and ever since 1906 the callable bonds have sold from one to five points higher than the non-callable bonds.

One of the first issues that I took an im-

portant part in was the refunding of the Los Angeles Lighting bonds in 1899. The company had out an issue of $1,250,000 of six per cent bonds due March 1, 1905. The Pacific Lighting Co. owned all the capital stock and had some $250,000 of the bonds in its treasury. Money was very cheap at the time and it occurred to me that by reducing the amount of the bond issue through the cancellation of these $250,000 of bonds we might be able to float a new issue at five per cent to take the place of the six per cent bonds. It was, in effect, guessing that a five per cent bond in 1905 would be worth 5¾ per cent premium. We made the offer, as above, to our bond holders, and about 80 per cent of them made the exchange; the unexchanged six per cent bonds were paid in cash when they matured.

The Pacific Gas Improvement Co. probably did the best financing as regards cost of money of any company for many years in California, when it sold in 1900 $1,250,000 of four per cent bonds at 99 net to the company.

In 1901 The Los Angeles Electric Co. sold an issue of $500,000 25 year five per cent bonds to I. W. Hellman at par net to the company. Mr. Hellman offered to take the bonds at par net or to sell them on commission for 2½ points, telling me at the time we would do better to let him sell them on commission, but I declined it. I told him I thought our business was to obtain our money needs, not to speculate in bonds. I said if he was willing to pay par we would accept that and in a day or two he sold the bonds at 103½.

The public utilities have not always had these low rates for money. In 1913 one large company was compelled at short notice to raise about $7,000,000 and it was done by selling an issue of one year five per cent notes to a large New York banking firm at a rate which cost the company over 11 per cent. At that time it would have been impossible to have raised any such sum in California. Now, of course, an issue of $10,000,000 is frequently made here and attracts no attention.

In 1921 two large public utility companies found it necessary to borrow money at the high prevailing rates. One company early in 1921 sold an issue of $2,500,000 five year seven per cent bonds and later in the same year an issue of $5,000,000 ten year seven per cent bonds, both at a discount of about six per cent. The other company sold $10,000,000 of twenty year seven per cent bonds at a trifle smaller discount. The three issues have long ago been retired, and I estimate the second company would have saved over $500,000 if it had sold ten year bonds instead of 20 year bonds. It is always a matter of judgment or opinion as to how long money will remain high or low.

To Give Home Economics Course on Equipment

A SHORT course in gas and electrical household equipment will be held at Purdue University, Lafayette, Ind., March 25 to 30. Although this course is planned primarily for women in home service departments of the public utilities, it is also open to all women handling either gas or electrical appliances for a public utility and it is believed that the women in charge of sales floors will gain a great deal from attendance at such a course. The idea of the course is the giving of technical as well as non-technical information about household equipment.

Equipment will be discussed from two viewpoints, namely, from that of the sales organization supplying the equipment and that of the home maker buying and using the equipment. Both lecture and laboratory work will be included.

Mrs. Anna J. Peterson, home service director of The Peoples Gas Light & Coke Co., Chicago, Ill., will give a talk on "The Future of Your Job in the Gas Industry," and Dr. Grace S. Zorbaugh, professor of household administration and economics science, Iowa State College, will give a talk on "Why Save Labor." This is particularly important inasmuch as most of the appliances are sold to the housewife from the standpoint of labor saving as well as that of economic operation.

The value of such courses as these to the industry cannot be overestimated. To build the gas load every gas company employee should be thoroughly familiar with the operation and load building possibilities of every appliance. Such courses as these give this information in a concise and workable form to the woman who is selling the public on gas fuel.

Publicity and Advertising Section

E. FRANK GARDINER, Chairman JAMES M. BENNETT, Vice-Chairman
CHARLES W. PERSON, Secretary

Suggest Advertising Code of Ethics

AN advertising code which is concerned with certain advertising practices of the present day has been prepared by the American Oil Burner Association. This code has timely interest for the gas industry, because such codes are rare indeed, and because of the competitive nature of the oil burner. The code follows:

A. Extravagant Claims.

1. Extravagant generalities are certain to be discounted by intelligent prospects. Such statements as "The last word in oil burners" and "at last the perfect burner" fail to carry conviction, because everyone knows that the last word will never be said nor perfection ever attained. On the other hand, they tend to create the impression that all burners are still in the experimental stage. Even though the advertiser excepts his own device, the reader knows that the former is prejudiced in his own favor. Advertising of this nature only increases the number of prospects who refuse to buy "until oil burners are perfected."

2. Claims of efficiency and performance should be made without comparison with other equipments in either general or specific terms, and should be limited to claims where there is a reasonable possibility for the user or prospective user to investigate.

B. Mechanical Details.

1. There are, and always will be, differences of opinion regarding the relative merits of the various methods of burning oil. The advertised claims by certain manufacturers that the designs of other manufacturers are uneconomical and unsafe have undoubtedly created a widespread feeling in the mind of the public that all oil burners are uneconomical and unsafe, and have thereby retarded the general public acceptance of oil heat. When it is considered desirable to explain the mechanical details of one's own burner, this can and should be done without disparaging reference to other designs.

2. The use of elaborate pseudo-scientific language should be avoided, as it tends to confuse the public mind and create the belief that the burning of oil is a mysterious and complicated process. Public confidence can be completely won only by educating the layman to the knowledge that oil heating is simple, safe and dependable.

C. Safety Features and the Underwriters' Laboratories.

1. To elaborate on "safety features" is to deliberately create in the public mind the idea that oil heating is dangerous. The simple statement that a burner is "listed as standard by the Underwriters' Laboratories" should suffice.

2. Listing by the Underwriters' Laboratories should not be claimed or implied unless the burner advertised has actually received such listing.

3. Listing by the Underwriters' Laboratories should not be used as a basis for irrelevant and unjustified claims.

D. Prices.

1. While there is no objection to quoting prices for burners installed without tanks, the words "tank extra" or the equivalent, should be displayed in type equally as prominent as "completely installed."

2. In comparing prices with other makes of burners be sure that the comparisons are fairly made on the basis of equivalent equipment.

Who Wants to Buy Some Valuable Magazines?

AN attractive offering presents itself in the following:

The American Gas Association Library has an extra set of the English Gas Journal and an extra set of the American Gas Journal, both beginning with the very first numbers and offered for sale at rather low prices. Some of the books in these sets are bound in buckram, some in half leather, others in heavy board. All are in fair condition.

The **Gas Journal** (London): One of the few available sets in this country; the first few volumes possess considerable historical value; They are veritably rare items—

Vols. 1-144 (1849-1918 complete) $150. (Plus transportation.)

The **American Gas Journal** whose earliest volumes naturally hold much of historical interest to gasmen in this country—

Vols. 1-75 (1859-1901—lacks 8 numbers) $75. (Plus transportation.)

The Peoples Gas Light & Coke Co. Breaks Records

THE Peoples Gas Light and Coke Co., Chicago, Ill., broke its maximum daily sendout record twice within a week during January. On Jan. 13 the 24-hour sendout was 176,368,000 cubic feet. Less than a week previous a record had been established with 168,000,000 cubic feet.

Unusually low temperatures during the month—the average daily reading was 5.9 degrees below normal—and the increasing popularity of gas for house heating, doubtless were contributing factors toward the establishment of the successive records, company officials state.

What Can Research Do?

(Continued from page 214)

improve conditions to the gas industry's consumers.

While presenting this paper, I believe I should proceed a little further and attempt to present an example, which will show the cost of other fuel compared to gas and which proves to me at least that every branch of the gas industry must undertake its specific research problem in order to obtain the maximum development.

The average calorific value of manufactured gas distributed by gas public utilities is approximately 550,000 B.t.u. per MCF. Assume the output cost of gas to be 30 cents per M cu.ft., that competitive coal would cost $4 per net ton and a calorific value of 13,000 B.t.u. per lb.; oil at $1.50 per barrel of 42 gals. and 5,600,000 B.t.u. per barrel; electricity at ½ cent per K.w.h. on the switchboard; natural gas 950,000 B.t.u. per MCF and costs at a point to be delivered into the distribution system 20 cents per M. The average theoretical cost compared with manufactured gas of 550,000 B.t.u. per M would be as follows:

Manufactured Gas	550,000 B.t.u.	$ .30
Coal 46 pounds	550,000 B.t.u.	.094
Oil 4⅛ gallons	550,000 B.t.u.	.147
Natural Gas 580 cu.ft	550,000 B.t.u.	.116
Electricity 161 K.w.h.	550,000 B.t.u.	.805

Based on purely theoretical 100 per cent thermal efficiency of use at these purely and only output costs and not considering any collateral advantages, electricity would be entirely out of the competitive field and manufactured gas would also be out, but nevertheless would be 2.68 times better off than electricity. We know from experience that the purely theoretical figures do not apply—that both gas and electricity are extensively sold at many times the competitive prices mentioned in these purely theoretical output costs for purposes where the other fuel could be used.

It is a research problem to ascertain what competitive figures gas must be sold for in order to take the business and how to do it to the greatest extent. The present basis of output cost of gas and the present average investments and other costs preclude the gas industry from taking on all the business which it is believed rightfully belongs to it.

Looking over the theoretical figures of the competitive costs of fuel for the same number of heat units, one can readily appreciate the fact that both electricity and gas must do extensive research work in order to reduce the actual output costs of its product with less loss of heat in the manufacture and must also reduce its overhead expense in every way, investment and otherwise.

Summing up: It is plain that it is a most difficult task to pick those research problems which are most important to the gas industry. From my viewpoint I think the most intensive study should be given to sales of gas, improving the load factor, etc., which of course means much more concentration on many other problems which are not purely technical. The technical research must go along with the other problems and as aggressively, but as we have our present investment, production methods and costs, distribution and other factors controlling the present ultimate cost to the consumer, I believe we should concentrate as much as possible to improve the uses of gas based on our present conditions and then keep working diligently and aggressively to improve the fundamental conditions affecting all costs of heat delivered to the prospective and present customers.

Manufacturers Section

H. LEIGH WHITELAW, Chairman F. G. CURFMAN, Vice-Chairman
C. W. BERGHORN, Secretary

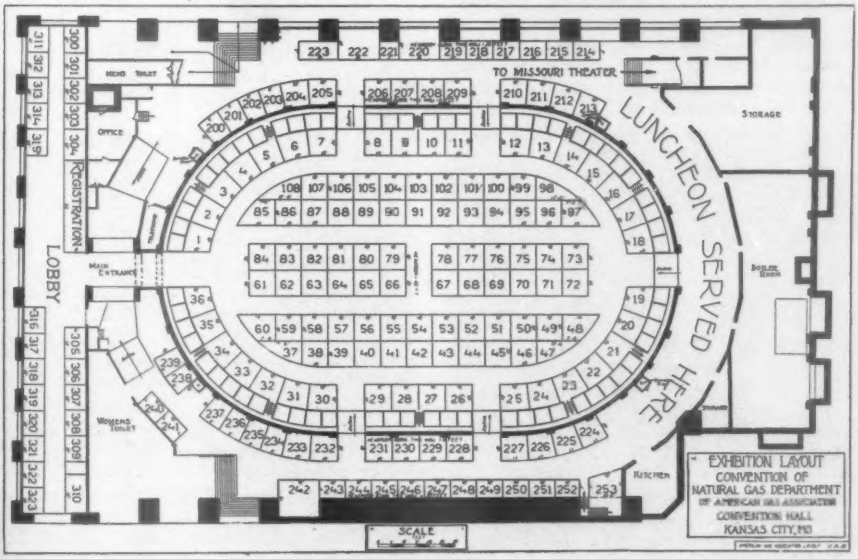
Natural Gas Exhibition Will Be Large

FROM May 6 to 9 the Convention Hall in Kansas City, Mo., will be the scene of the large and interesting exhibit of appliances and equipment to be held in conjunction with the annual meeting of the Natural Gas Department of the A. G. A. More than 120 manufacturers have taken space; it is expected that all will have on exhibition a most comprehensive array of wares.

The following are the names of the exhibitors and the numbers of the booths where they will be found, as of March 27:

Booths

A-B Stove Co., Battle Creek, Mich. ... 100, 101
American Cast Iron Pipe Co., Birmingham, Ala. ... 106
American Gas Products Corp., New York, N. Y. ... 59, 60
American Heater Corp., St. Louis, Mo. 231
American Meter Co., New York, N. Y. ... 64-66, 79-81
American Range Corp., Shakopee, Minn. .. 228
Arco Co., Cleveland, Ohio ... 73
Barber-Greene Co., Aurora, Ill. ... 235
Bastian-Blessing Co., Chicago, Ill. ... 312
Beckwith Co., Dowagiac, Mich. ... 239
B-Line Boiler Co., Cleveland, Ohio ... 18
Blodgett Co., Inc., The G. S., Burlington, Vt. ... 223
Bridge & Beach Mfg. Co., St. Louis, Mo. 23
Bristol Co., Waterbury, Conn. ... 55, 56
Bryan Steam Corp., Peru, Ind. ... 206
Bryant Heater & Mfg. Co., Cleveland, Ohio ... 63
Burgess-Parr Co., Moline, Ill. ... 203
Century Stove & Mfg. Co., Kansas City, Mo. ... 216, 217
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa. .. 93
Clark & Co., Geo. M., Div., Chicago, Ill. 319
Cleveland Gas Burner & Appliance Co., Cleveland, Ohio ... 207
Cleveland Heater Co., Cleveland, Ohio 7
Cleveland Trencher Co., Cleveland, Ohio ... 240, 241
Clow & Sons, James B., Chicago, Ill. ... 24, 25
Columbia Burner Co., Toledo, Ohio ... 229
Columbus Heating & Ventilating Co., Columbus, Ohio ... 15
Connersville Blower Co., Connersville, Ind. ... 38
Continental Supply Co., St. Louis, Mo.... 54
Cooper Co., C. & G., Mt. Vernon, Ohio ... 19
Crane Co., Chicago, Ill. ... 90, 91, 103, 104
Dallas Foundry, Dallas, Texas ... 313
Darling Valve & Mfg. Co., Williamsport, Pa. ... 75
Dearborn Chemical Co., Chicago, Ill. ... 98, 99
Detroit-Michigan Stove Co., "Garland Div.," Detroit, Mich. ... 50, 51



Detroit-Michigan Stove Co., "Jewel Div.," Detroit, Mich. 94, 95
Dresser Mfg. Co., S. R., Bradford, Pa. .. 52, 53
Electrolux Servel Corp., New York, N. Y. 26, 27, 28, 29
Eriez Stove & Mfg. Co., Erie, Pa. 202
Estate Stove Co., Hamilton, Ohio 107, 108
Fisher Governor Co., Marshalltown, Iowa . 57
Fountain-Way Corp., Cincinnati, Ohio 208
Foxboro Co., Foxboro, Mass. 69, 70
Frick Reid Supply Corp., Pittsburgh, Pa. 48, 49
General Gas Light Co., Kalamazoo, Mich. 12, 13, 14
Giant Mfg. Co., Council Bluffs, Iowa 214
Groble Gas Regulator Co., Anderson, Ind. 215
Guardian Gas Appliance Co., Cleveland, Ohio 30, 31
Helme & McIlhenny, Philadelphia, Pa. ..64, 81
Hill, Hubbell & Co., Tulsa, Okla. 213
Hoffman Specialty Co., Inc., Waterbury, Conn. 249
Holland Furnace Co., Kansas City, Mo. .. 243
Home Incinerator Co., Milwaukee, Wis ... 62
Home Service Committee, A. G. A., New York, N. Y. 309
Homestead Heater Co., Newark, N. J. ... 8, 9
Hurley Machine Co., Chicago, Ill. 245, 246
Johns-Manville Corp., New York, N. Y. .. 234
Kansas City Gas Co., Kansas City, Mo. ... 304
Kernit Incinerator Co., Ampere, N. J. 218
Knight, A. B., Fairmont, W. Va. 230
Lamneck Co., W. E., Columbus, Ohio 252
Lattner Mfg. Co., P. M., Cedar Rapids, Iowa 17
Linde Air Products Co., New York, N. Y. 42, 43, 44
Lindemann & Hoverson Co., A. J., Milwaukee, Wis. 227
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Metric Metal Works, Erie, Pa. 66, 79
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National Cast Iron Pipe Co., Birmingham, Ala. 314
National Supply Co., Toledo, Ohio ... 89, 105
National Tube Co., Pittsburgh, Pa. .. 39, 40, 41
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New Method Stove Co., Mansfield, Ohio 200, 201
Ohio Foundry & Mfg. Co., Steubenville, Ohio 5, 6
Oil Well Supply Co., Pittsburgh, Pa. 36
Payne Furnace & Supply Co., Beverley Hills, Calif. 21, 22
Peerless Manufacturing Co., Louisville, Ky. 209
Permutit Co., Kansas City, Mo. 233
Pittsburgh Equitable Meter Co., Pittsburgh, Pa. 67, 68
Pittsburgh Water Heater Co., Pittsburgh, Pa. 85, 86, 87
Pennsylvania Furnace & Iron Co., Warren, Pa. 253
Refinery Supply Co., Tulsa, Okla. 102
Reliable Stove Co. Div., Cleveland, Ohio 32, 33
Reynolds Gas Regulator Co., Anderson, Ind. 92
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Robinson Orifice Fitting Co., Los Angeles, Calif. 212
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Sonner Burner Co., Winfield, Kans. 244
Spencer Thermostat Co., Cambridge, Mass. 1
Sprague Meter Co., Bridgeport, Conn 3
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Sweet & Doyle Foundry & Machine Co., Troy, N. Y. 242
Time-O-Stat Controls Co., Elkhart, Ind. 247, 248
Troop Water Heater Co., Pittsburgh, Pa. 34
Tulsa Stove & Foundry Co., Sand Springs, Okla. 221
U. S. Bureau of Mines, Bartlesville, Okla. 302
U. S. Cast Iron Pipe & Foundry Co., Burlington, N. J. 4
Victaulic Co. of America, New York, N. Y. 58
Wailes Dove-Hermiston Corp., Tulsa, Okla. 96, 97
Walworth Co., New York, N. Y. .. 45, 46, 47
Westcott Valve Co., East St. Louis, Ill. 236, 237
Western Gas Magazine, Los Angeles, Calif. 35
The Wilcolator Co., The, Newark, N. J. 220
Worthington Pump & Machinery Corp., New York, N. Y. 61
Wood Mfg. Co., John, Conshohocken, Pa. 316
W-K-M Co., Inc., Houston, Texas 204, 205
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Industrial Gas Section

J. P. LEINROTH, Chairman C. W. BERGHORN, Secretary C. C. KRAUSSE, Vice-Chairman

Frit Smelting Done Best With Gas

By J. B. NEALEY

J. B. Nealey

THE ever increasing popularity of porcelain enamel as a finish for iron and steel products presages further development in industrial gas sales utilization. Gas fuel has certain decided advantages over other fuels in smelting frit, the base used in making up this type of finish, and a recent study made at the plant of a large gas range manufacturer furnishes conclusive proof of this.

In this factory coal-fired frit furnaces were formerly used and these were later supplanted with gas units. This afforded important comparative data as to the use of these two fuels in the manufacture of the same product. It was soon disclosed that a higher quality of frit, a better finish to the work, and a smoother surface were produced with the use of gas. Furthermore, the chemical reaction and smelting time were cut by 25 per cent and the time employed in grinding the resulting frit was reduced by a third.

As for fuel costs, a week's test run brought out the fact that the average gas consumption per batch was 6060 cu.ft. with the gas used for heating up prior to charging added in. This reduces to 7.94 cu.ft. of gas per pound of frit charged and with gas at 56 cents per M cu.ft. the fuel cost amounts to only $0.00445 per pound of frit charged.

Art and science have combined to make the modern gas range a thing of beauty as well as a unit simple and efficient in operation. This is amply demonstrated in the products put out by the Detroit-Michigan Stove Co., Detroit. The company is a consolidation of the Detroit Stove Works, The Art Stove Co., and the Michigan Stove Co. These three divisions are now consolidated within the confines of a single plant, which has a production capacity of 850 stoves daily.

There are two processes of applying and burning enamel which are known respectively as the dry and wet methods. The dry process is applicable only to cast iron while the wet process can be used on both cast iron and steel. In the former the metal product is heated red hot in a furnace, removed long enough to have the dry enamel, in powder form, dusted onto it and re-

Side view of gas frit smelting furnace, and a view showing the discharge and granulating tank

Charging a gas enameling furnace

turned to the furnace so that it will fuse onto the metal. The second consists of dipping the article to be coated into liquid enamel and putting it into the furnace for fusing. Automatic and continuous gas furnaces have recently caused some fundamental changes in the enameling process.

While the processes of enameling do not present any serious difficulties, the manufacture of the frit from which the enamel is made is quite a different thing. The crux of the situation is that the frit must be so compounded that the resulting coating will have exactly the same coefficient of expansion as the base metal which it covers. As there are many different analyses of iron and steel, all with a different coefficient of expansion, complications arising from this single factor are met with at the outset.

The large variety of ingredients necessary to a batch further complicates the process as each must be exactly proportioned in relation to the whole. Very few ceramic engineers agree as to formulas. Some of the substances used in making up a batch of frit are borax, quartz, feldspar, soda ash, fluorspar, cryolite, sodium nitrate, zinc oxide, enamel white, ammonia, nickel, cobalt, etc., according to varying formulas and as to whether a ground or white coat is to result.

The Detroit-Michigan Stove Company has standardized upon porcelain enamel finish for its gas ranges, making its own frit, compounding the enamel, and applying and fusing same. The method of dipping the parts into liquid enamel is used. One ground coat under two white coats is the practice in this plant. This necessitates two frit furnaces, one for fusing the frit for the ground coat and the other for the frit used in making up the white coat stock.

These furnaces are each 12 feet wide, 7 feet high and 8 feet deep and are set back to back. The walls of arch are composed of three courses of brick, each 4½ inches thick, the middle course being of sil-o-cel insulating material and the other two of special firebrick. The hearth, which is also constructed of firebrick, is three feet thick and sets on a two-foot concrete foundation.

There is an opening in the top of each furnace and the charges are dropped through these openings into the furnaces by means of hoppers on the floor above. The ingredients are all stored on this upper floor and the charges made up adjacent to the hoppers, to avoid extra handling. Each charge weighs approximately 750 pounds. The hearths of the furnaces slope from the sides and rear to the front where the discharge spout is located, and the total slope amounts to 5½ inches. The discharge port is two inches in diameter.

The arch slopes from front to rear and four gas burners with four inspirators on a single manifold are located in one end firing along this arch. Pure borax is put into the furnace and the hearth completely coated with it prior to charging. This gives the surface a highly refractory glaze and lengthens the life of the hearth materially. The products of combustion are removed through a vent in the side opposite from the burners.

It takes from six to eight hours to heat up the furnace before putting in the first charge and after that the fused charge is drawn off and a new charge put in every two hours on an average. The furnaces can be worked faster than this as they have been charged at intervals of 1½ instead of two hours.

The charges flux at from 1600 to 1800° F., but the furnaces are carried at from 2200 to 2400° F. in order to speed up the

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Commercial Section

G. M. KARSHNER, Chairman — G. E. WHITWELL, Vice-Chairman

J. W. WEST, Jr., Secretary

Promoting the Sale of House Heating

IN the sale of gas-fired equipment, the Westchester Lighting Company, whose general office is located in Mount Vernon, N. Y., is achieving results that are attracting wide attention in the industry.

Its success in arousing public interest in heating with gas is attributed to a carefully balanced promotional plan, which includes among its features:

A special rate for gas heating.

Timely advertising and publicity.

Engineering service and expert advice given without obligation to the prospect.

Follow-up work.

Dealer contact.

Practical demonstrations of a sincere desire to satisfy every user, thus creating goodwill and benefitting by the customer's recommendation of this heating method.

A filing system by which the entire history of each installation may be had at a glance.

In April, 1928, this and its affiliated companies, supplying gas service throughout Westchester county, announced that on the first day of the following June they would reduce rates for house heating and industrial purposes under special contract.

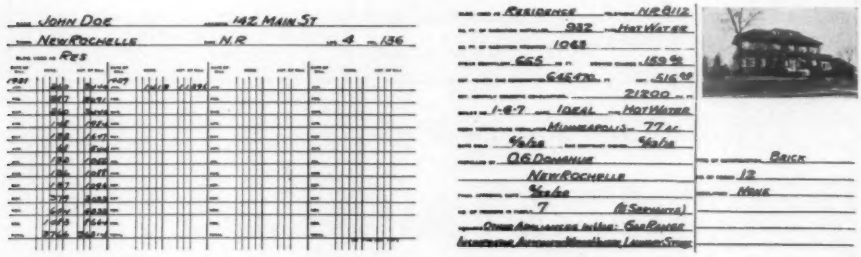
Newspaper advertisement used by the Westchester Lighting and referred to in this article

Eugene H. Rosenquest, President of these utility organizations, in a full-page newspaper announcement at that time, said in part:

"When your Lighting Company installs an appliance either in a home or an industrial plant, we believe that it is promoting a means for better living and working conditions.

"The installation of the appliance is just the starting point of our responsibility in the transaction. Should your equipment fail to give you perfect satisfaction at any time or for any reason, it is our pleasurable duty to make any adjustment necessary to keep it in efficient service. So that every householder or factory owner may have the information he requires, our staff of heating experts is available to furnish complete and accurate estimates of your installation and operating costs. Since the final result depends largely on conditions existing on your premises, we invite you to have our representative survey your house or building at the earliest opportunity. For this service you will incur no obligation."

Carefully prepared advertising and con-



Both sides of the office card record

certed sales effort followed, and, since June 1, 1928, about 200 installations have been made in a suburban territory having an estimated population of 500,000. At the same time, arrangements were made with plumbers and heating contractors to display the equipment in their establishments, the tradesmen being encouraged to become merchandisers. Early last summer an impressive page advertisement was published in local newspapers. It emphasized the convenience, efficiency and cleanliness of gas as a fuel, and graphically illustrated how basements of Westchester county homes had been converted into attractively arranged playrooms or lounges after gas boilers were installed. This advertising campaign, although launched at a time when comparatively few persons were giving much thought to furnace tending, proved very helpful to the sales force, and its effectiveness and feasibility were particularly apparent when autumn approached.

The Westchester Lighting Company recently used another large advertisement in every daily and weekly newspaper in its territory. It attracted wide attention and produced excellent results.

There are three outstanding and appealing features in the advertisement which is shown here.

For a border, photographs of 33 structures, selected at random but representing virtually every type of building, are used.

Names and addresses are printed of some of the Westchester people who heat their residences by gas, and who had given the company permission to advertise the fact.

The names of physicians who have taken house-heating service are grouped. The psychology of this is obvious. The many advantages of gas as a fuel is given added significance when medical men adopt this method of house-heating.

A letter was sent by each Westchester County district manager to every physician in his jurisdiction who was not using gas to heat his office or dwelling. Attention was called to the fact that certain members of his profession (and a number of names were listed) "heat their homes with gas and have permitted us to say that they recommend it as a very satisfactory fuel." The letter follows:

"Dear Dr. Doe:—

"Members of your profession, whose names are listed below, heat their homes with gas and have permitted us to say that they recommend it as a very satisfactory fuel.

Dr. R. R. Ryan, 15 Autenrieth Road, Scarsdale.

Dr. W. Van Wie, 43 Rockridge Road, Mt. Vernon.

Dr. J. R. Evers, Millard Avenue, Philipse Manor, Tarrytown.

Dr. J. G. Morrissey, 237 Van Cortland Park Ave., Yonkers.

Dr. A. F. Dooling, 151 Lorraine Avenue, Mt. Vernon.

Dr. F. A. M. Bryant, 133 Park Avenue, Mt. Vernon.

"In the event of your contemplating a change in the method of heating your home, may we, without obligation on your part, submit an estimate of the cost of installation and operation of gas fired heating equipment?

"We are ready to serve you in this and other respects at any time and await your request."

This supplementary promotional work has already brought gratifying results.

About the same time another unique phase in the company's house heating set-up was

(Continued on page 253)

Technical Section

HARRY E. BATES, Chairman — B. V. PFEIFFER, Vice-Chairman

H. W. HARTMAN, Secretary

Committees Plan for Production Conference

DEFINITE program plans are now being formulated for the third Joint Production and Chemical Conference of the Technical Section of the American Gas Association. The Conference will be held at the Lord Baltimore Hotel, Baltimore, Md., May 27, 28, and 29.

The Lord Baltimore Hotel is a new hotel, and it has splendid facilities for handling the Conference.

A program group from each of the committees interested in the Conference has been appointed as follows:

Carbonization Committee—Program Committee

H. C. Porter, Chairman, 1833 Chestnut St., Philadelphia, Pa.
C. R. Bellamy, 120 Broadway, New York, N. Y.
J. D. Davis, U. S. Bureau of Mines, Pittsburgh, Pa.
R. L. Fletcher, Providence Gas Co., Providence, R. I.
N. H. Memory, Isbell-Porter Co., Newark, N. J.
J. V. Postles, Philadelphia Gas Works, Philadelphia, Pa.

Chemical Committee—Program Committee

H. J. Rose, Chairman, The Koppers Co., Pittsburgh, Pa.

(Continued on page 252)

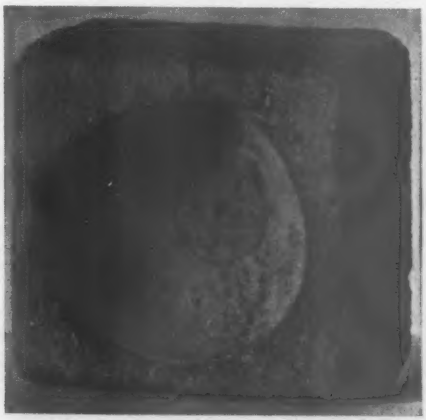
Cement Cover for Iron Service Box is Devised

BY C. C. SIMPSON

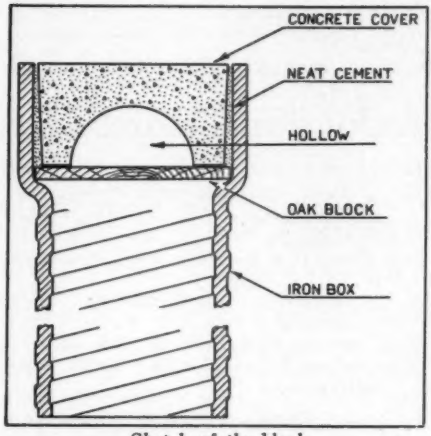
THE accompanying pictures and sketch show a cast cement block that is used as a cover for the iron street boxes placed over service valves, drips, etc. This cement cover was devised to replace the cast iron cover formerly used.

The method of casting box covers is to fill a series of wooden forms, that are in two parts held together with hooks, with a mixture of one part cement to three parts sand. A ½-inch sphere of lead is placed into each form before the concrete is poured, in order that block may be cast hollow, so that it can be easily broken. The cement is allowed to set 24 hours before removing forms. While the cement is soft, the letter "G" for

Mr. Simpson is engineer of distribution, Consolidated Gas Co., of New York, N. Y.



Front and back of the cast cement block



Sketch of the block

gas is stamped into the top. In addition to the cement cover, a piece of creosoted oak board, with a screw eye in the center for lifting, is inserted under the cover so that when the cover is broken for removal, pieces of cement will be prevented from falling into the box. When the cement cover is inserted into the box, it is grouted in with neat cement, completely sealing the box. It is well to allow the cover to weather as long as possible after removing from forms as this insures a better cement.

The advantages of the cement cover over the iron cover are many, among which are the following:

It is less expensive, as it can be made for $.10 as against $.40 for the iron cover. The cement cover enables the box to be sealed so that dirt and water do not fill the box. With the iron cover the boxes had to be cleaned periodically. This is not necessary with the cement cover. The cement cover is easily removed by breaking with a hammer, whereas the iron cover sometimes becomes wedged and can not be removed except by cutting the box.

It is unnecessary to say that this cover cannot be used in the street.

Production Conference

(Continued from page 251)

A. R. Belyea, Consolidated Gas Co. of New York, New York, N. Y.
M. C. K. Jones, Consolidated Gas, Electric Light & Power Co., Baltimore, Md.
E. C. Uhlig, The Brooklyn Union Gas Co., Brooklyn, N. Y.

Water Gas Committee—Program Committee

W. J. Murdock, Chairman, Coal Products Manufacturing Co., Joliet, Ill.
I. K. Peck, Midland Utilities Investment Co., Chicago, Ill.
J. H. Wolfe, Consolidated Gas, Electric Light & Power Co., Baltimore, Md.

These committees have prepared splendid programs from the standpoint of their committees, and most excellent discussion should be had. The Water Gas Committee is particularly stressing mechanical generators, steam decomposition in water gas sets, and low gravity water gas. The program prepared by the Carbonization Committee includes a paper by S. B. Sherman on the new Racine plant of vertical chamber ovens, and a joint paper by Messrs. Locke, Ryan, and Pfluke on the effect of saturation temperature and fuel depth on producer gas which it is believed will be a great addition to the literature on this subject.

The Carbonization Committee is again giving great attention to a coke symposium which will include a paper on the experience in the sale of coke at Battle Creek, where they have maintained a record of selling more coke per capita than any other city in the country.

The chemists have again provided a very splendid program, their first session being planned to interest operators of water gas and coal gas plants as well as chemists. Considerable attention is being given to gas oil specifications and evaluation, and a symposium has been arranged on the use of chemical control in gas plant operation. Their second session is intended to be of primary interest to the chemist. S. T. Powell, an authority on boiler-water conditioning, will present a paper in this session. An open discussion will be had on the importance of the Gas Chemists' Handbook as a reference work, and considerable time will be given to automatic sampling methods. A symposium on laboratory technique should prove of great interest to the chemist.

Frit Smelting

(Continued from page 248)

melting. The fused charge is seven inches deep at the discharge port and when ready is allowed to flow out and into water, which is contained in a wooden tank 2½ feet square and eight feet long located directly under the spout. When the hot frit strikes the water it breaks up into grains or granulates. The tank will hold three charges and when full the water is drawn off and the granulated frit is shoveled into barrels and boxes. Naturally the hot frit heats the water, but it has been found that if fresh water is flowed through the tank, from a faucet, the temperature is kept sufficiently low for the purpose in hand.

The granulated frit is then sent to the mill to be ground and made up into ground and white coat enamel. The mill includes five large ball mills and a smaller one, the larger ones being about five feet in diameter and four feet wide. They are of the Patterson type, use flint balls and all except one are driven from jack shafts, the exception having an individual motor drive.

The frit manufactured as described in this article is for enamel to be used on steel. The frit base for enamel for cast iron is another proposition and is purchased elsewhere. However, the enamels for both steel and cast iron are made up in this plant. The making of the enamel consists principally of adding clay, magnesia, tin oxide, water and coloring matter, etc. These ingredients are added to the frit before it is charged into the ball mills and the material discharged from these mills is enamel, either ground or white coat, as the case may be. Sometimes several colors are employed to obtain the shade desired and the whole process of proportioning the various substances involves a very nice technique.

The enamel is now ready to be either sprayed onto the parts to be coated or placed in tanks so that the parts may be dipped into it. The two white coats are applied directly to the cast iron parts as no ground coat is used on this metal. The white coats are fused on at 1250° F. for from 15 to 20 minutes, a different type of furnace equipped with speed forks being employed. The ground coat for the steel parts is fused at 1600° F. in about five minutes while the white coats are subjected to temperatures of from 1500 to 1550° F. for approximately three minutes.

Promoting House Heating

(Continued from page 250)

initiated. A photograph of the exterior of every building in which gas house heating equipment had been installed was reduced to a size of about four by two inches and reproduced on a filing card. Upon this card a complete history of the entire installation, together with other valuable data, is recorded. The efficacy of this card indexing will doubtless be very apparent to those who study its features.

The Westchester Lighting Company's advertising and sales effort, so far as gas heating is concerned, is not predicated upon the theory that there is one basic appeal which will sell a majority of prospects. By combining the many advantageous factors, the ultimate goal is reached with greater ease—and satisfaction.

It might be interesting to note, too, that this company recognizes the wisdom of practicing what is preached. One cannot effectively advertise the commercial benefits of his wares if he does not use them in his own business. The Westchester Lighting Company's general office building, which is 10 stories high and the largest structure of its kind in the county, is heated by gas. Gas fuel heats the score of more of other buildings used by the company. There is no doubt that such a manifestation of faith in this method of house heating has a tremendous weight when selling points are being promulgated.

OUR NEW MEMBERS

(Continued from page 240)

Roberts, L. J., Panhandle Power & Light Co., Borger, Texas.

Elmore, F. B., Panhandle Power & Light Co., Borger, Texas.

Carr, Walter deL., U. G. I. Company, 1401 Arch St., Philadelphia, Pa.

McCormack, Henry A., Guarantee Co. of N. Y., 140 Broadway, New York, N. Y.

Veale, William J., Cons. Gas Company, 408 E. 111th St., New York, N. Y.

Wilson, John W., Peoples Gas Co., Glassboro, N. J.

Robinson, William C., City of Philadelphia, Room 348, City Hall, Philadelphia, Pa.

Page, Charles B., The Steamotor Co., 205 W. Wacker Drive, Chicago, Ill.

Routledge, Walter, Union Gas & Elec. Co., Cincinnati, Ohio.

Rick, A. H., Electric Bond & Share Co., New York, N. Y.

Leach, Edwin A., Gasteam Heating Co., 2444 Devoe Terrace, New York, N. Y.

Schofer, Nathan, Illinois Northern Utilities Co., Rock Falls, Ill.

Schuman, Charles H., Briarcliff Manor, N. Y.

Durst, Charles B., Dayton Power & Light Co., 122 N. Main St., Dayton, Ohio.

Evans, Fitz James, F. J. Evans Eng. Co., 1106 Watts Bldg., Birmingham, Ala.

Harrison, W. H., Henry L. Doherty & Co., 60 Wall St., New York, N. Y.

Stevenson, J. Stanley, 247 Kenworth Road, Columbus, Ohio.

Zasoba, Peter C., Potomac Edison Co., Frederick, Md.

Graham, W. A., Graham Stove Co., 1910 Main St., Houston, Texas.

English, Henry C., Vermont Lighting Corp., Springfield, Vt.

Underhill, John LeRoy, North Attleboro Gas Light & Power Co., North Attleboro, Mass.

Goldsmith, George W., Greenwich Gas Co., Greenwich, Conn.

Galloway, William R. C., Peoples Gas Light & Coke Co., 122 S. Michigan Ave., Chicago, Ill.

Barnert, Meyer, Northern States Power Co., 6th & Cedar Sts., St. Paul, Minn.

Rocky, Esther (Miss), The Dayton Power & Light Co., 205 E. First St., Dayton, Ohio.

Macfarland, Herbert D., Westchester Lighting Co., 9 So. 1st Ave., Mt. Vernon, N. Y.

Shea, Michael Elword, Hagertown Light & Heat Co., 26 So. Jonathan St., Hagertown, Md.

Van Note, R. S., Public Service Elec. & Gas Co., Newark, N. J.

Chandler, Robt. F., Public Service Elec. & Gas Co., Newark, N. J.

Robinson, J. C., Public Service Elec. & Gas Co., Newark, N. J.

Schaefer, E., Public Service Elec. & Gas Co., 80 Park Place, Newark, N. J.

Smith, Arthur, Public Service Elec. & Gas Co., Newark, N. J.

Gillet, Louis C., Milwaukee Gas Light Co., 381 15th St., Milwaukee, Wis.

Patton, Clarence K., Council Bluffs Gas Co., 30 Pearl St., Council Bluffs, Iowa.

Hand, Wm. P., Southern California Gas Co., Redondo Beach, Calif.

Ruhl, J., Louis A., Coal Convention Corp., 285 Madison Ave., New York N. Y.

Kosel, Alexander A., 9541 Baltimore Ave., Chicago, Ill.

Huse, Merritt C., Philadelphia-Suburban Counties Gas & Elec. Co., 1000 Chestnut St., Philadelphia, Pa.

Megonigal, William S., Philadelphia-Suburban Counties Gas & Elec. Co., 1000 Chestnut St., Philadelphia, Pa.

Marrs, Gerald C., Philadelphia-Suburban Counties Gas & Elec. Co., 1000 Chestnut St., Philadelphia, Pa.

Gaskill, J. F., Philadelphia-Suburban Counties Gas & Elec. Co., 1000 Chestnut St., Philadelphia, Pa.

Russell, Charles E., Philadelphia-Suburban Counties Gas & Elec. Co., 1000 Chestnut St., Philadelphia, Pa.

Harris, F. Bruce, Public Service Co., of Nor. Ill., 911 Church St., Evanston, Ill.

Hough, Henry W., 384 William St., E. Orange, N. J.

Felber, Edward R., Madison Gas & Elec. Co., Madison, Wis.

Wenchel, John G., Cons. Gas Elec. Light & Power Co., Lexington Bldg., Baltimore, Md.

Yentsch, Charles, Cons. Gas Elec. Light & Power Co., Lexington Bldg., Baltimore, Md.

Spicer, Baetus C., Cons. Gas Elec. Light & Power Co., Lexington Bldg., Baltimore, Md.

Roelke, John P., Cons. Gas Elec. Light & Power Co., 408 Lexington Bldg., Baltimore, Md.

Chalk, Earle, Cons, Gas & Elec. Co., Baltimore, Md.

Geisz, Henry F., Cons. Gas Elec. Light & Power Co., Baltimore, Md.

Bethke, Oscar A., Cons. Gas Elec. Light & Power Co., Lexington Bldg., Baltimore, Md.

Backer, Adam K., Cons. Gas Elec. Light & Power Co., Baltimore, Md.

Nelson, A. W., Panhandle Power & Light Co., Borger, Texas.

Kone, K. T., Panhandle Power & Light Co., Borger, Texas

Cortelyou, E. C., Cities Service Gas Co., Bartlesville, Okla.

Decker, Stiles M., Sheldon Machinery Corp., 147 Varick St., New York, N. Y.

Dillard, T. H., Magnolia Gas Co., Bethany, La.

Fash, R. H., Fort Worth Laboratories, Fort Worth, Texas.

Glass, M. T., Dixie Gulf Gas Co., P. O. Box 1473, Shreveport, La.

Gordon, Dugald, Brokaw, Dixon, Garner & McKee, 521 Slattery Bldg., Shreveport, La.

Gore, W. H., Dixie Gulf Gas Co., 318 Esperson Bldg., Houston, Texas.

Langston, W. H., Dixie Gas & Fuel Co., Nacogdoches, Texas.

Rowland, E. M., Empire Companies, Bartlesville, Okla.

Yoe, George H., Empire Companies, Bartlesville, Okla.

Thorn, T. W., National Tube Co., 910 Branard St., Houston, Texas.

Scoggins, Rem. M., Box 581, Queensboro Station, Shreveport, La.

Martin, John J., Arkansas Natural Gas Co., Hope, Ark.

Rogers, J. P., Palmer Corp. of La., Shreveport, La.

Slickel, M. N., 4510 La Branch St., Houston, Texas.

Little, W. M., City Service Gas Co., Bartlesville, Okla.

Associations Affiliated with A. G. A.

Canadian Gas Association
Pres.—Frank Elcock, Ottawa Gas Co., Ottawa, Ont.
Sec.-Tr.—G. W. Allen, 7 Astley Avenue, Toronto.
Conv., June 13 & 14, 1929, Ottawa, Ont.

Empire State Gas and Electric Association
Pres.—Chas. S. Ruffner, Mohawk Power Corp., Albany, N. Y.
Chairman Gas Section—H. E. Merrill, Republic Light & Power Co., Tonawanda, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
Conv., 1929.

Illinois Gas Association
Pres.—E. E. Lungren, Western United Gas & Electric Co., Aurora, Ill.
Sec.-Tr.—George Schwaner, 305 Illinois Mine Workers Bldg., Springfield, Ill.
Conv., 1930.

Indiana Gas Association
Pres.—T. J. Kelly, Northern Indiana Public Service Co., Fort Wayne, Ind.
Sec.-Tr.—F. W. Budd, Central Indiana Gas Co., Muncie, Ind.
Conv., May 1-2, 1929, Gary, Ind.

Michigan Gas Association
Pres.—F. A. Newton, Consumers Power Co., Jackson, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., July 1 to 3, 1929, Mackinac Island, Mich.

Mid-West Gas Association
Pres.—Louis Stein, Minneapolis, Minn.
Sec.-Tr.—Roy B. Searing, Sioux City Gas & Electric Co., Sioux City, Iowa.
Conv., Minneapolis, Minn., April 15-17, 1929.

Missouri Association of Public Utilities
Pres.—A. E. Reynolds, Springfield Gas & Electric Co., Springfield, Mo.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Conv., May 16-17-18, Sedalia, Mo.

New England Gas Association
Pres.—G. W. Stiles, Portland Gas Light Co., Portland, Me.
Exec. Sec.—C. D. Williams, 41 Mount Vernon St., Boston, Mass.
Chairman Operative Div.—Isaac T. Haddock, Cambridge Gas Light Co., Cambridge, Mass.
Secretary Operating Div.—H. G. Taylor, Lawrence Gas & Electric Co., Lawrence, Mass.
Gov. Sales Div.—J. H. Sumner, Cambridge Gas Light Co., Cambridge, Mass.
Pres. Industrial Div.—L. B. Crossman, Boston Con. Gas Co., Boston, Mass.
Sec.-Tr. Industrial Div.—L. E. Wagner, Providence Gas Co., Providence, R. I.
Chairman Acctg. Div.—R. D. Washburn, Massachusetts Lighting Co., Boston, Mass.
Sec.-Treas. Acctg. Div.—Otta Price, Boston Con. Gas Co., Boston, Mass.
Chairman Manufacturers Div.—T. F. Piser, Welsbach Co., Boston, Mass.
Sec.-Treas. Manufacturers Div.—J. H. McPherson, 7 Water St., Boston, Mass.
Conv., 1930.

New Jersey Gas Association
Pres.—H. A. Stockton, County Gas Co., Atlantic Highlands, N. J.
Sec.-Tr.—Louis Stoecker, Public Service Electric & Gas Co., Newark, N. J.
Conv., April 24 & 25, 1929, Stacey-Trent Hotel, Trenton, N. J.

Ohio Gas and Oil Men's Association
Pres.—L. K. Langdon, Union Gas & Electric Co., Cincinnati, Ohio.
Sec.-Tr.—Wm. H. Thompson, 811 First National Bank Bldg., Columbus, O.
Conv., 1930.

Oklahoma Utilities Association
Pres.—T. R. Weymouth, Oklahoma Natural Gas Corp., Tulsa, Okla.
Mgr.—E. F. McKay, 1020 Petroleum Bldg., Oklahoma City, Okla.
Conv., 1930.

Pacific Coast Gas Association
Pres.—C. H. Dickey, Hotel Fairmont, San Francisco, Calif.
Exec. Sec.—Clifford Johnstone, 447 Sutter St., San Francisco, Calif.
Conv., Sept. 10-13, 1929, at Del Monte, Calif.

Pennsylvania Gas Association
Pres.—Grier Hersh, Pennsylvania Gas & Electric Co., York, Pa.
Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
Conv., April 10 & 11, 1929, Benjamin Franklin Hotel, Philadelphia, Pa.

Pennsylvania Natural Gas Men's Association
Pres.—George W. Ratcliffe, Columbia Gas & Electric Corp., Pittsburgh, Pa.
Sec.-Tr.—H. A. Gager, 2017 Farmers Bank Bldg., Pittsburgh, Pa.
Conv., 1929.

Southern Gas Association
Pres.—Roy A. Zeigler, Jacksonville Gas Co., Jacksonville, Fla.
Sec.-Tr.—J. P. Connolly, 141 Meeting St., Charleston, S. C.
Conv., April 23-25, 1929, Memphis, Tenn.

Southwestern Public Service Association
Pres.—W. H. Burke, Stone & Webster, Inc., Houston, Texas.
Chairman Gas Section—R. A. McNees, San Antonio Public Service Co., San Antonio, Texas.
Sec.—E. N. Willis, 403 Slaughter Bldg., Dallas, Texas.
No Convention, 1929.

The Public Utilities Association of Virginia
Pres.—A. W. Higgins, Virginia Public Service Co., Charlottesville, Va.
Sec.—A. B. Tunis, 301 East Grace St., Richmond, Va.
Conv., 1930.

Wisconsin Utilities Association
Pres.—C. R. Phenicie, Wisconsin Public Service Corp., Green Bay, Wis.
Exec. Sec.—J. N. Cadby, 432 Broadway, Milwaukee, Wis.
Meetings of Sections.

Eleventh Annual Convention of the American Gas Association
Atlantic City, N. J. October 14-18, 1929

Annual Meeting of Natural Gas Department
Kansas City, Mo. May 6-9, 1929

Employment Bureau

(Address All Communications to Key Number)

SERVICES REQUIRED

A LARGE GAS COMPANY in an Eastern city wants an industrial gas man of some experience. Address A. G. A.
Key No. 0130.

A HOLDING COMPANY desires to secure the services of a young engineer with four to six years' experience in distribution work, thoroughly familiar with mains and transmission lines. Please state full qualifications in first letter and salary expected. Address A. G. A.
Key No. 0135.

GAS SALES ENGINEER—Experienced in househeating. State complete details as to experience, age and salary desired. Address A. G. A.
Key No. 0136.

MIDDLE WEST gas company in process of developing natural gas properties in North Dakota, South Dakota and Montana has opening in its general office for gas engineer experienced in design of distribution systems, construction and operation of gas properties. About 35 to 40 years of age. Give detailed experience and salary expected in applying. Address A. G. A.
Key No. 0137.

WANTED—Young Gas Engineers. Technical men with one or more years experience in either Distribution or Works, or both, with a very progressive company in the Central States. Opportunities excellent for rapid promotion. State full details in first letter. Address A. G. A.
Key No. 0138.

WANTED: Gas fired boiler, house heating sales engineer in New England territory. Position offers unequaled opportunity to the right man. Replies held in strictest confidence.
Key No. 0139.

HOUSE HEATING ENGINEER to supervise house heating sales and service. Requirements: College graduate 32 to 40 years old. At least five years' experience in combustion engineering and plant operation; thorough knowledge of house heating equipment, systems and sales promotion work. Give age, education, experience, and salary desired.
Key No. 0140.

SERVICES OFFERED

CHEMICAL ENGINEER—38 years of age—15 years' experience in water and Coal Gas Plant operation, construction, distribution, and By-Product Plant work, desires connection as Gas Engineer with a holding company, or large individual gas company. Address A. G. A.
Key. No. 265.

WANTED—Position as manager of a small gas company or assistant superintendent of a larger company, by practical man, 36 years old. Married. 12 years' experience including water gas plant operator both high and low pressure, also all branches of distribution. Best of references. Address A. G. A.
Key No. 266.

GAS ENGINEER with twenty years' wide practical experience in the design, construction and operation of coal, water, coke oven, and natural gas plants and distribution systems located in all parts of the U. S. A., is desirous of an opportunity in a similar capacity with consulting engineer or holding company. Experience covers large, medium and small properties. Technical education. Address A. G. A.
Key No. 268.

WANTED—Position as manager of industrial department as well as house heating, commercial, hotel and restaurant work. Now with large company in above capacity. Middle age, good experience and reference. Can handle large job. Address A. G. A.
Key No. 269.

MANAGER OR GENERAL SUPERINTENDENT—25 years' experience in the construction, manufacture, distribution, valuation, public relations, and sales. Both coal and water gas, high and low-pressure. Age 40 and married. Good references. Address A. G. A.
Key No. 270.

EXECUTIVE, graduate engineer, 15 years' experience, construction, operation, management, mostly electric light and power public utilities. Schooled by a financial leader of the industry, especially in reduction of operating expenses. Knowledge of state regulatory requirements. Would be interested in holding company appointment, preferably salary plus percentage of effected savings per annum. Address A. G. A.
Key No. 273.

OPPORTUNITY to secure services of experienced gas range salesman as representative of manufacturer in Eastern Territory. Knowledge of gas appliances covered by 15 years' experience, both local and traveling. Utility and general trade. Available January 1, 1929. Address A. G. A.
Key No. 276.

GAS ENGINEER. College trained, thirty years old, married and employed at present. Nine years' experience in operation many types and sizes of coal, water, blue and producer gas plants. Address A. G. A.
Key No. 277.

EXPERIENCED CONSTRUCTION ENGINEER and designer with a good technical background and structural steel experience desires to locate in New York or vicinity. Address A. G. A.
Key No. 278.

EXECUTIVE, graduate Mechanical Engineer with 20 years' experience in design, construction, operation and management of Gas Properties. Competent to handle all local affairs, increase business and reduce operating costs. Would like appointment as Manager of small property, or Division Manager or Gas Engineer of close connected group. Age 41. Married. Good references. Address No. 279.
Key No. 279.

AVAILABLE—A man who is employed at present as an Engineer at one of the properties of a large holding company. During his ten years in the business he has been cadet engineer, plant foreman and superintendent's assistant in large plants and manager of a small property. Thorough knowledge of water gas operation, high- and low-pressure distribution, and office routine. Technical graduate, 39 years of age. Address A. G. A.
Key No. 280.

ENGINEER with 7 years' experience in gas and electric utility construction, maintenance, operation and accounting, desires new connection as manager, assistant manager, or superintendent of small utility. New England preferred. Address A. G. A.
Key No. 281.

SALESMAN with wide experience, including sales promotion, desires connection as representative for manufacturer. Acquainted with gas companies and dealers in territory from Boston to Washington. Proposition on agency basis for Eastern territory or Pacific Coast also considered. Address A. G. A.
Key No. 282.

GAS DISTRIBUTION ENGINEER. Also fully acquainted with manufacture and utilization. Understands the necessary methods of handling the public and municipal officials. Ready to serve at once. Will go anywhere, if position is permanent. References will be given by district or city or other local and managing companies. Address A. G. A.
Key No. 284.

GAS ENGINEER, college education, with twelve years' experience, first four with Coal Gas & Electric Co., last eight years as manager of small Water Gas Co., desires position as manager or assistant manager of a gas or combination company. Address A. G. A.
Key No. 285.

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